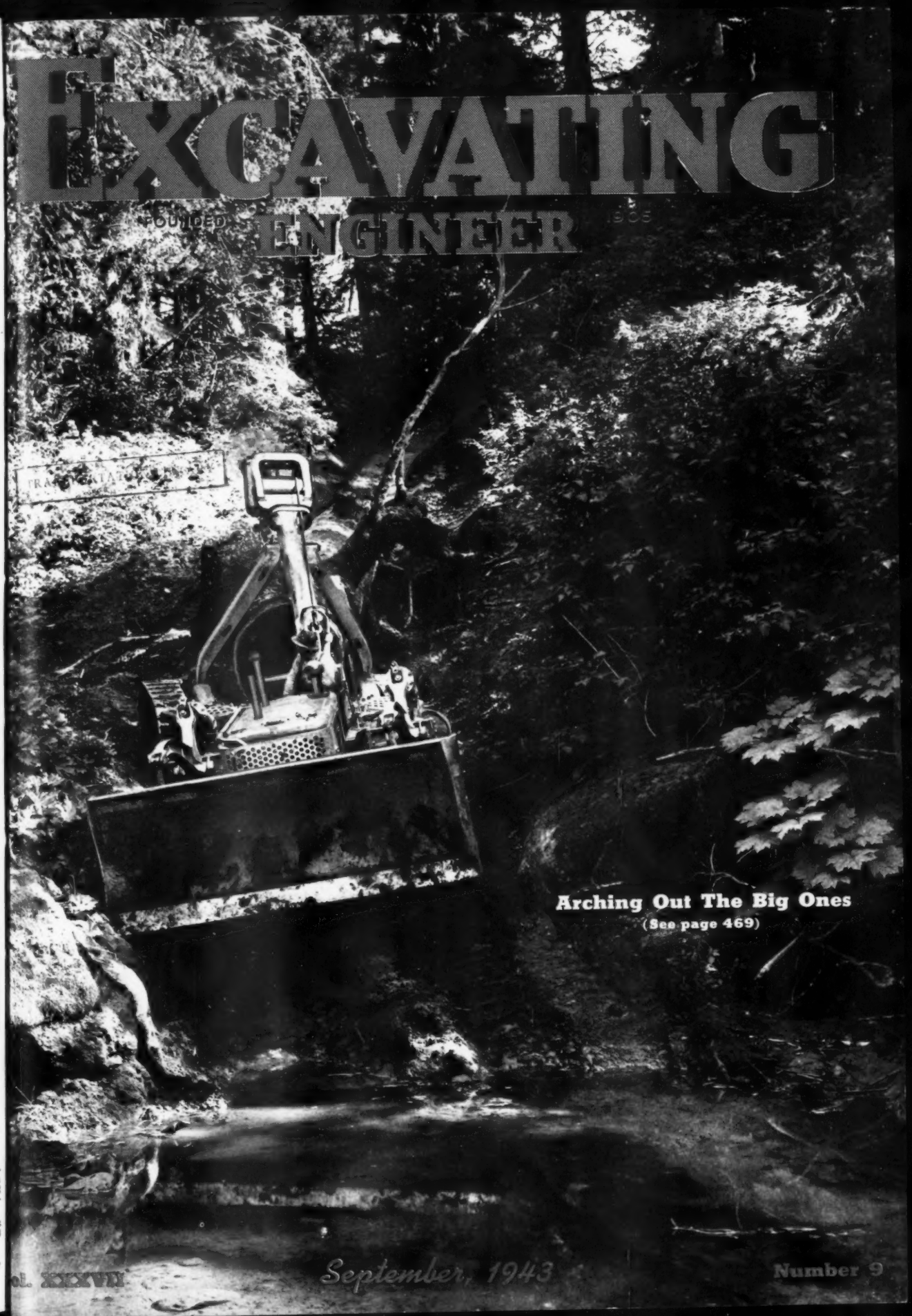
EXCAVATING ENGINEER

FOUNDED 1905



Arching Out The Big Ones

(See page 469)

Vol. XXXVII September, 1943 Number 9

KEEP YOUR SCRAPE IN *Fighting Trim...*

Your 4-wheel scraper is a fighting tool and must be kept at original working efficiency. Maintenance is no longer a question of individual operating costs only—it is an obligation we owe the United Nations, a means to get more material to the far-flung theaters of war through capacity production and conservation of equipment. Help pave the road to victory by following these hints.

1. Follow a regular schedule of lubrication and inspection. Correct troubles before they become serious.
2. Disassemble and clean sheaves periodically to prolong the life of bearings and pins.
3. Check all cable leads to see that ropes are properly aligned to prevent undue rope wear.
4. If a sheave-stand is bent, straighten it before the bad off-lead damages or cuts the cable.
5. Avoid unnecessary cable strain — do not travel with ejector, apron or bowl at extreme height.
6. If cutting edge shows wear, build it up by welding before lip casting becomes damaged.
7. Check all bolts and cotter pins regularly and watch tire inflation.

Bucyrus-Erie scrapers are built to handle the large-scale, high-speed dirt-moving jobs required by wartime production schedules. But even these rugged digging units need vigilant care to give victory performance day after day, job after job. Your International TracTracTor distributor will be glad to help you with a practical maintenance program.

P146-C

BUCYRUS ERIE
TRACTOR EQUIPMENT

SEE YOUR
INTERNATIONAL TRACTRACTOR
DISTRIBUTOR

EXCAVATING ENGINEER

FOUNDED 1905

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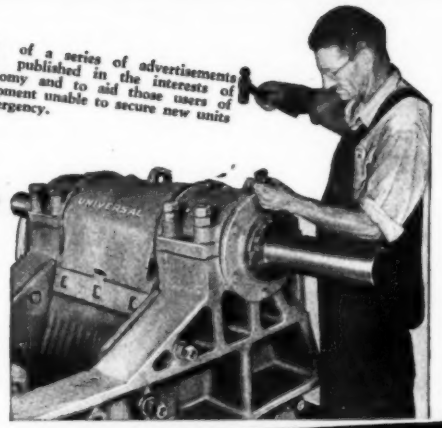
The Care and Maintenance of Rock Crushers

Ten Time and Money-Saving Maintenance Rules:

No. 5 of a series of advertisements published in the interests of national economy and to aid those users of crushing equipment unable to secure new units during the emergency.



1. Be sure there is no play in side bearings. Tighten locking nuts with a blunt chisel and hammer, as illustrated.

2. Before shutting off power, be sure that machinery is cleaned of all stone or gravel.

3. Keep your equipment clean and free of dirt and excess grease.

4. Tighten all loose nuts and bolts every morning or every night, and check them periodically during the day. Make a thorough check after moving to a new location. Loose parts cause rapid wear or serious breakage and costly delays.

5. Crusher and chassis should always be kept level

6. The key wedge should be kept close to the jaw. Insert shims behind wedge if necessary. Check wedge daily to be sure that it is tight; and that movable jaw remains centered.

7. Always adjust movable jaws when crusher is running empty, until they touch lightly. Then back them off slightly for clearance. Never allow them to pound. Tension spring should be just loose enough to allow free operation.

8. Don't raise or lower the adjusting wedge enough to cause a tilting in the toggle plate bearing wedge. Use a longer or shorter toggle to get the desired opening at the discharge opening of the jaws.

9. Be sure toggle seat on pitman is tight.

10. Be sure to use genuine parts—and see that they are properly installed. Follow instruction sheets or consult manufacturer.

UNIVERSAL ENGINEERING CORP.

Formerly Universal Crusher Co.

610 C Ave. West **Cedar Rapids, Iowa**

They're giving their lives—
let's lend our money!

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

. . . that they may have a Happy Landing!

WHEN these Army Air Force Bombers return from their mission over enemy targets, they must have a happy landing—runways that are long, wide and level.

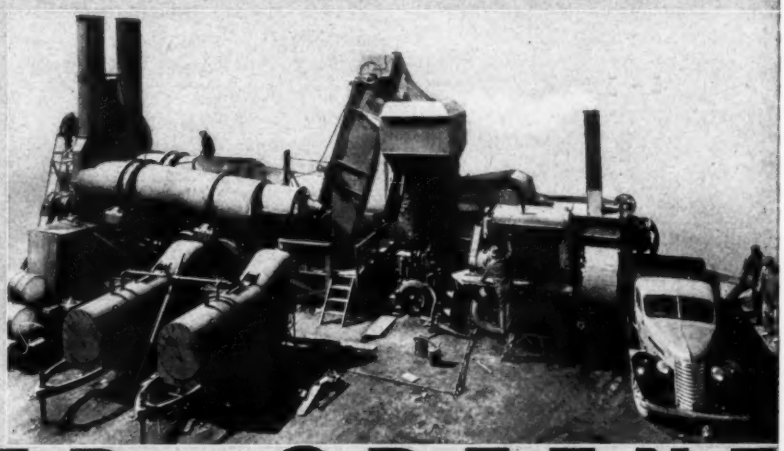
Barber-Greene machines, in the hands of the Army Engineer Corps, are building those advance base runways faster and better—and on time! In every theatre of operation in the world, Barber-Greene runways are giving a fighting Army or Navy air force pilot a smooth take-off—his last feel of earth. Those runways first welcome him back, his mission successfully accomplished.

Runways built by Barber-Greene equipment speeded President Roosevelt, our Commander-In-Chief, to his momentous meeting with Prime Minister Churchill at Casablanca.

Standard B-G Asphalt Mixers, Finishers, Dryers, Loaders, tested and proved by many thousands of peacetime construction jobs, were ready when the Army needed them. Today, their production vastly increased, they are literally building the foundations for victory.

You can investigate this equipment now for your future needs—when victory is ours you will be ready with complete information. Our catalogs are yours without obligation. Write to: Bituminous Equipment Sales, Barber-Greene Company, Aurora, Ill., U. S. A.

Below is the Army Airport Plant, built by Barber-Greene for the Army Engineer Corps, and used in every theatre of operation in the world. Production of this equipment—THE STANDARD B-G LINE—has been vastly increased to help speed victory.



ARMY E NAVY

Awarded August, 1942

43-2

BARBER-GREENE

• Left: International TD-18 tractor with Bucyrus-Erie bullgrader on landscape and drainage work. Above: Caterpillar tractor with LeTourneau scraper on drainage and land leveling.

Over 10,000,000 cubic yards of dirt moved as Maxon Construction Company converts 75 square miles of plain into Naval Ammunition Depot at Hastings, Nebraska

By E. G. VICKERS

Pass the Dirt, and then

OVER TEN MILLION cubic yards of dirt were moved in the past year in converting about 75 square miles of flat, windblown farm land on the plains of Adams and Clay counties, near Hastings, Nebraska, to a naval ammunition depot. Dirt-moving operations included grading for roads and railroads, excavating for building foundations and cover filling.

Actual construction work on the Hastings Naval Ammunition Depot was started by the Maxon Construction Company of Dayton, Ohio, prime contractor on the project, on July 14, 1942. Prior to start of construction work the site of the Hastings Naval Ammunition Depot was occupied by 232 rural families, 108 of which were land-owners. Some of these farmers had homesteaded the land that they gave up and there were heartaches. There were occasional hostilities as engineers and survey parties staked out roads and building sites where farm houses, barns, and silos were still standing, but in general the farmers were cooperative with the Navy and construction workers. The Navy took pains to see that the farmers were inconvenienced as little as possible. Total loss of crops due to construction work was minimized by co-operation between depot workers and farmers and as a result there was an added contribution made to the war effort. The exodus of farm population from the new reservation was slow and not entirely completed until March 1, 1943. Approximately $350,000 worth of growing corn, small

• Left: Granding along side of forms for an inert storage building. Below: Buckeye Model 410 ditcher used by Midwest Construction and Asphalt Company for digging water main ditches in the smokeless powder area.

...e Ammunition

grain, and feed crops were harvested after actual construction started.

The Hastings Naval Ammunition Depot is similar in design and construction to a Navy depot built by the Maxon Construction Company at Burns City, Indiana, before the company moved to this project. It is thought that the production personnel of the Hastings Ammunition Depot might reach several thousand by the end of this year when production reaches its peak.

Heavy equipment was moved onto the project in the latter part of August, 1942, when grading operations on roads and building foundation excavations were started. Grading work was continued daily through the winter to the middle of July of this year, except for less than a dozen days when heavy rain stopped operations. Snow from a few falls last winter was pushed aside at the site of grading operations and the frost crust was ripped up when it was necessary to remove the top soil from the level agricultural area. Work continued day and night in many of the scattered sections of the approximate area of 75 square miles. No rock of any kind was encountered in the entire area.

• Lorain dragline working on drainage ditch in smokeless powder area.

Grading for Batcher Plants

First work on the job was the grading necessary to prepare sites for concrete batcher plants, railroad grade, building new service roads, and regrading old roads where they would be more convenient for hauling necessary construction materials. Grade was put up for 110 miles of railroad, most of which has been laid and is now in use. Grading was done for 370 miles of new road and about 130 miles of existing county road in the area. One hundred and ninety-six miles of road on the project are being given a stabilization course and 50 miles will be armor-coated.

Close, or neat, grading for footings and foundations, usually done by manual labor for economy, was done with grading equipment on the Hastings Naval Ammunition Depot because of the acute labor shortage. All building sites were excavated below top soil level to a yellow clay base and then re-embanked with clay to six inches below finished floor, or bottom of concrete, level. The Maxon Construction Company used ¾-yard Insley and ½-yard Lorain dragline machines to make the cutouts for columns and footing excavations. The equipment operators became adept to bringing these excavations to neat grade and as the project progressed the use of heavy grading equipment for the work became easy, fast and practical.

The Maxon Construction Company moved over 3,900,000 cubic yards of dirt with its own equip-

• Left: High explosive magazine or "igloo" with waterproof coating before being covered with dirt. Below: The "igloo" after being covered with dirt.

• A view of the main gate and administration buildings of the Hastings Naval Ammunition Depot, looking south from U. S. Highway 6.

ment on the job and this company subcontracted in excess of 4,000,000 cubic yards to the following contractors: Thiesen Company, Nebraska, Jarvis-Gustaveson-Trotman, North Dakota; Haggart & Noel, South Dakota; Braden Construction Company, Iowa; Roberts Construction Company, Nebraska, and Henry Schroeder & son, Iowa. Subcontractors were allowed payment on cut cross section and also for top soil stripping to a depth of six inches on road building, railroad grade and subgrade embankments for structures. Most of the 1,310,000 cubic yards of cover fill in the high explosive magazine group was handled by the Maxon Construction Company with its own Bucyrus-Erie bullgraders, six TD-9's, ten TD-14's, and thirty TD-18's, all with front end pumps.

Most of the 1,200,000 cubic yards of cover fill in the smokeless powder magazine group was subcontracted to Thiesen Construction Company.

During April over 30,000 cubic yards of dirt per day were moved on the project. The average amount of dirt moved was below this figure during a few months, but for the rest of the construction period the average was higher.

Braden Company Operations

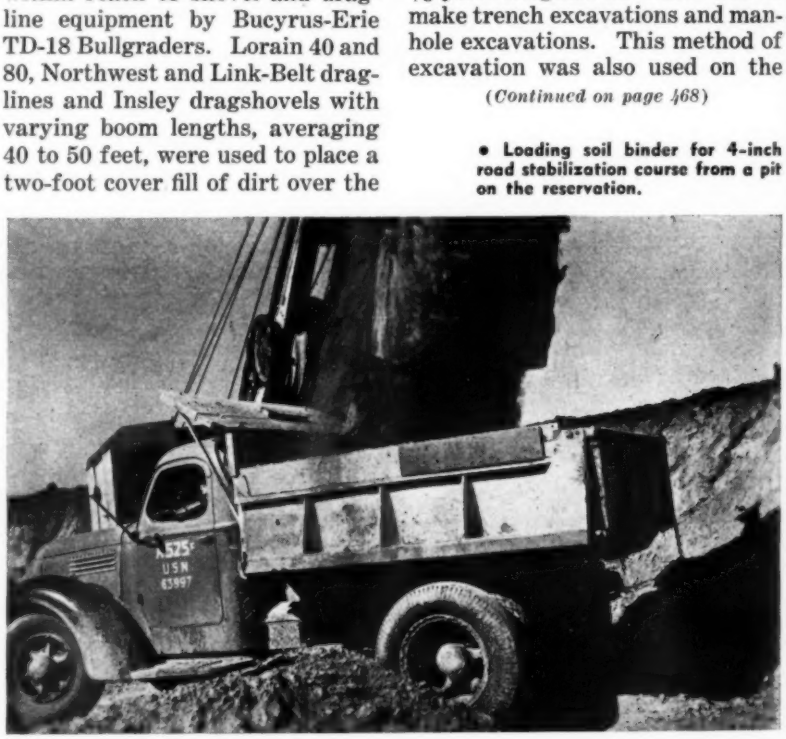
An average of 18 16-yard LeTourneau scrapers pulled by D-8 Caterpillar tractors was used by the Braden Construction Company in performing their part of the subcontract. As an example of the production of this company, 67,400 cubic yards of dirt were moved in the last week of February and 70,500 cubic yards were moved the following week, and 182,500 cubic yards the next week. During April the Braden Company moved an average of 125,000 cubic yards a week. Most of the 1,500,000 cubic yards of dirt subcontracted to the Braden Company was moved during the winter months in sub-freezing weather.

Dirt used to cover the high explosive and smokeless powder magazine groups was pushed to within reach of shovel and dragline equipment by Bucyrus-Erie TD-18 Bullgraders. Lorain 40 and 80, Northwest and Link-Belt draglines and Insley dragshovels with varying boom lengths, averaging 40 to 50 feet, were used to place a two-foot cover fill of dirt over the top of igloos or magazine barrels. This dirt was graded down the sides of the igloos on a 1/2:1 slope.

Electric lines were carried in underground concrete - encased conduit. Most of the excavations for this conduit were made by the Maxon Construction Company with Parsons and Buckeye Model "410" ditchers. In a few places where it was impossible to use ditchers Lorain ½-yard and Insley ⅜-yard dragshovels were used to make trench excavations and manhole excavations. This method of excavation was also used on the

(*Continued on page 468*)

• Loading soil binder for 4-inch road stabilization course from a pit on the reservation.



Building Roads Under Fire

Earth-moving equipment plays important role in successful U. S. attack on Aleutian Island of Attu

THE SUCCESSFUL ATTACK of combined U. S. Army and Navy forces upon the Japanese-held Island of Attu in the Aleutians goes down as an important chapter in the history of the Battle of the Pacific. This daring exploit was masterfully conceived and executed under the most difficult climatic and geographical conditions with the use of earth-moving equipment.

From the first landing on Red Beach, through the action along Holtz Bay, Massacre Bay, and until the last Jap sniper was wiped out in the mountain passes behind Chichagof Bay, the U. S. forces plowed steadily ahead, through bottomless mud, snowfields and stubborn resistance from the Japanese holding force.

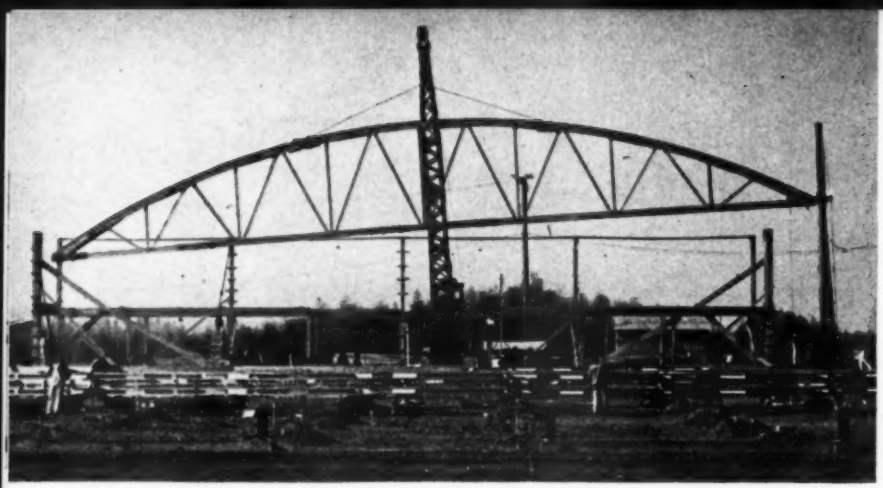
Army engineer road builders criss-crossed Attu with tractor trails that in less than three weeks marked the island as definitely American. Under fire they built more roads than the Japanese had previously built in the 11 months they occupied Attu.

• U. S. Forces landing supplies and material at Red Beach, Attu Island, where our men first swarmed ashore. Tractor-drawn trailers were the prime movers in getting supplies from the beachheads to the troops inching up the mountain sides.—Photo by U. S. Army Signal Corps.

Tractor-drawn trailers were the prime movers in getting supplies from the beachheads to the troops inching up the mountain sides. The tractor treads furnished the

(*Continued on page 462*)

• Mechanized equipment couldn't do it all. Left:—Thirty yards inland the bottomless Aleutian mud began, making it impossible in some places to use heavy vehicles. This photograph shows a bulldozer being winched out of the mire. Below:—In this particular area tractors were useless in moving artillery. This 37-mm. anti-tank gun had to be pulled by hand.—Photos U. S. Army Signal Corps.



TIMBER FOR STEEL

Timber Structures, Inc. uses cranes to erect massive timber trusses which, to a large extent, have replaced steel in wartime construction

By CHARLES R. WILSON

TIMBER STRUCTURES, Inc., of Portland, Oregon, whose activities include engineering design, fabrication and the field assembly and erection of massive timber trusses which, to a large extent, have replaced steel, are doing an outstanding job in wartime construction.

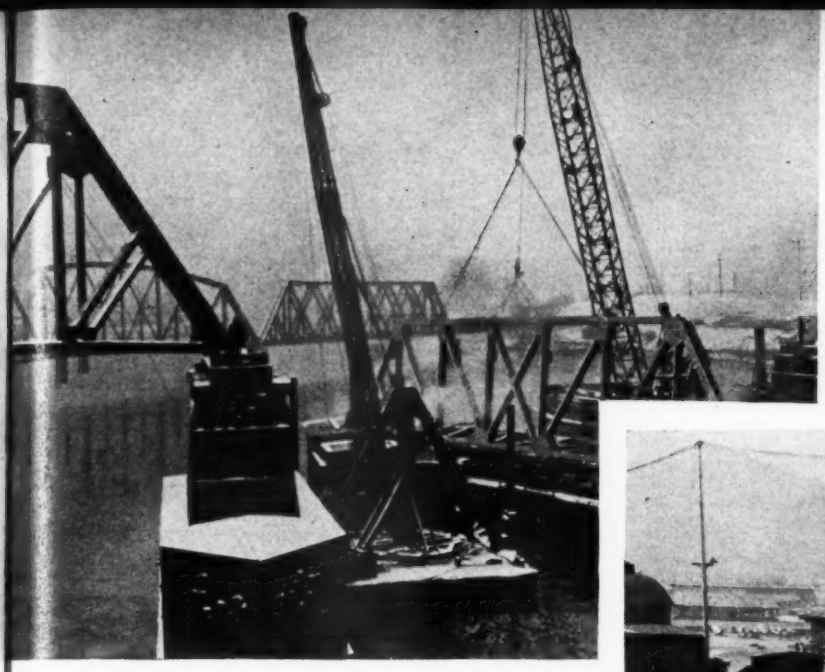
The production of Laminated Lumber is an item pioneered by Timber Structures, Inc. This is a system of bonding with waterproof adhesive the proper grades of dry lumber. The members are built up straight or curved as beams, arches, etc.

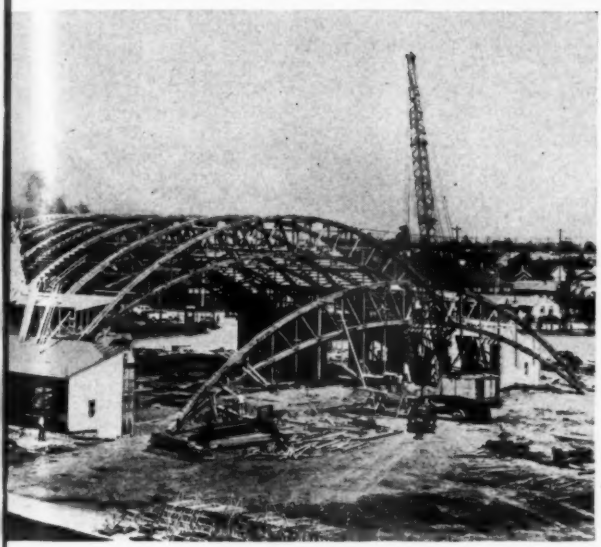
The application of engineering to timber by employing modern methods of connection such as Split Rings, known as connectors, shear plates, etc., has elevated timber from a carpentry material to an engineering material. The development of structural grades has assisted this advance in engineering.

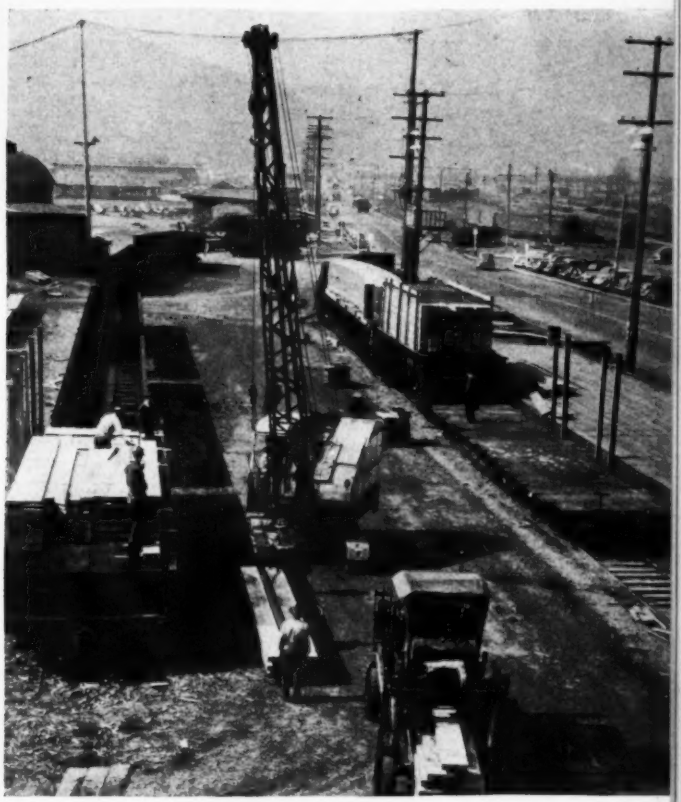
The erection of these structures requires the use of numerous cranes. Some of the smaller jobs are handled by one small crane and on bigger jobs several larger cranes with longer booms are used.

Cranes owned and operated by

• Top: Northwest Model 80 GMC truck crane with 95-foot boom employed by Timber Structures, Inc., in Oregon shipbuilding mold loft. Center: Lorain Model 40 crane with 45-foot boom used in the erection of smaller buildings at the Medford Government Bottom: Two hundred-foot bowstring type laminated trusses erected by Timber Structures, Inc., at the Cleveland Municipal Airport to provide a 400-foot hangar building. The trusses are on 30-foot centers. Erection is handled very nicely by two Link-Belt cranes with 80-foot booms and 20-foot jibs owned by E. C. Mahon Company of Detroit, Michigan.



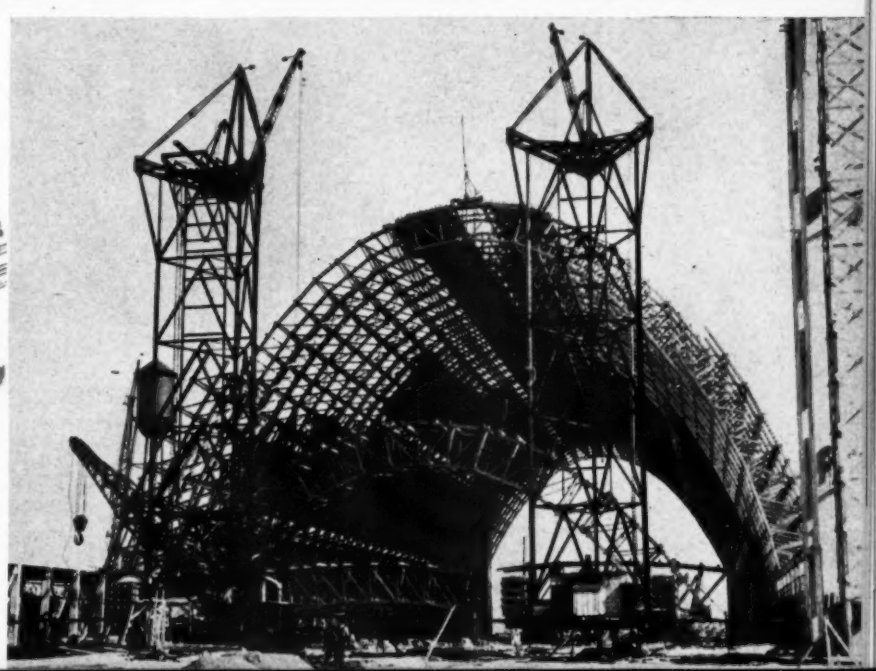




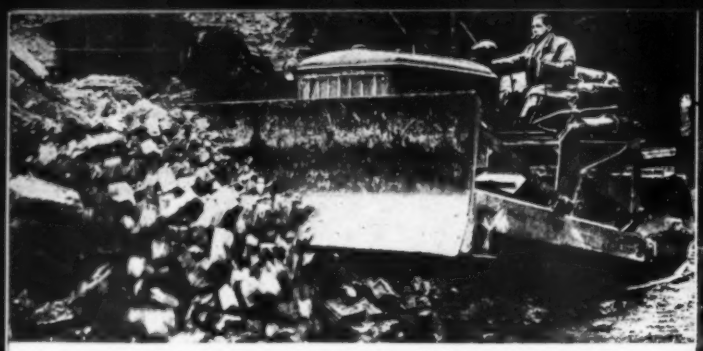
• Left: Section of the Fleming [illegible] Bridge in Pennsylvania fabricated by Timber Structures, Inc., and erected by derrick barges. One [illegible] 100-foot boom has a lifting capacity of 15 tons and the other has a 60-foot boom and a 25-ton capacity. Units are powered by diesel [illegible]. One 30-foot boom Motocrane and one counterweight with 35-foot boom, both made by Lorain, were also used. Below: One of several Bucyrus-Erie 20-B's with 35-foot booms used by Timber Structures, Inc., to load and unload cars to and from carrier blocks.

Timber Structures, Inc., in the erection of various buildings, and their respective boom lengths and lifting capacities at a 15-foot radius, are as follows: one Bucyrus-Erie 15-B, 45-foot boom, 9,000 pounds; two Bucyrus-Erie 20-B's,

(Continued on page 464)



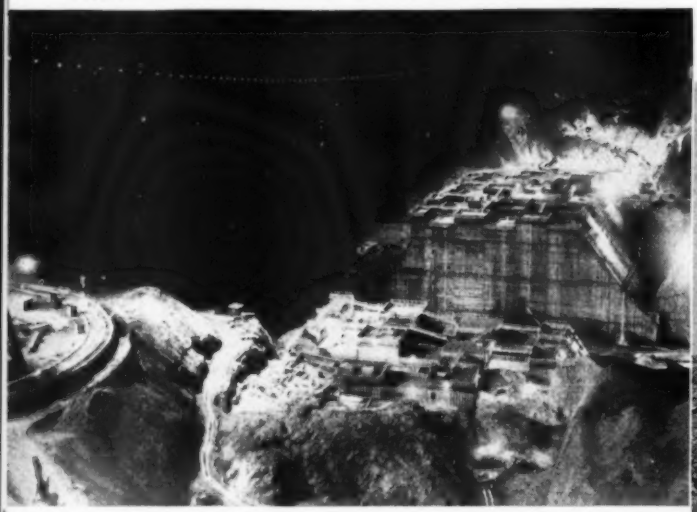
• Above: P & H crane with 97-foot boom employed by Timber Structures, Inc., in the erection of 160-foot glue-laminated crescent arches (two hinged arches) at Boeing Field, Seattle. Right: Fireproof treated lumber in the Lakeburne hangar, fabricated by Timber Structures, Inc., and erected by Kaine, Smith & Duffy Construction Corp. The pre-assembled arch section is erected by two stiff-leg derricks mounted on 145-foot high three-legged towers with boom. The booms are 75 feet long and the rigs have a 21 to 40 ton lifting capacity, depending on the boom position.



• Caterpillar diesel tractor equipped with LaPlant-Choate bulldozer being used to clear debris from bomb damage in London. New, more modern buildings will eventually replace many of the historic, but antiquated, structures destroyed by Nazi explosives.—*British Combine Photos, Ltd.*

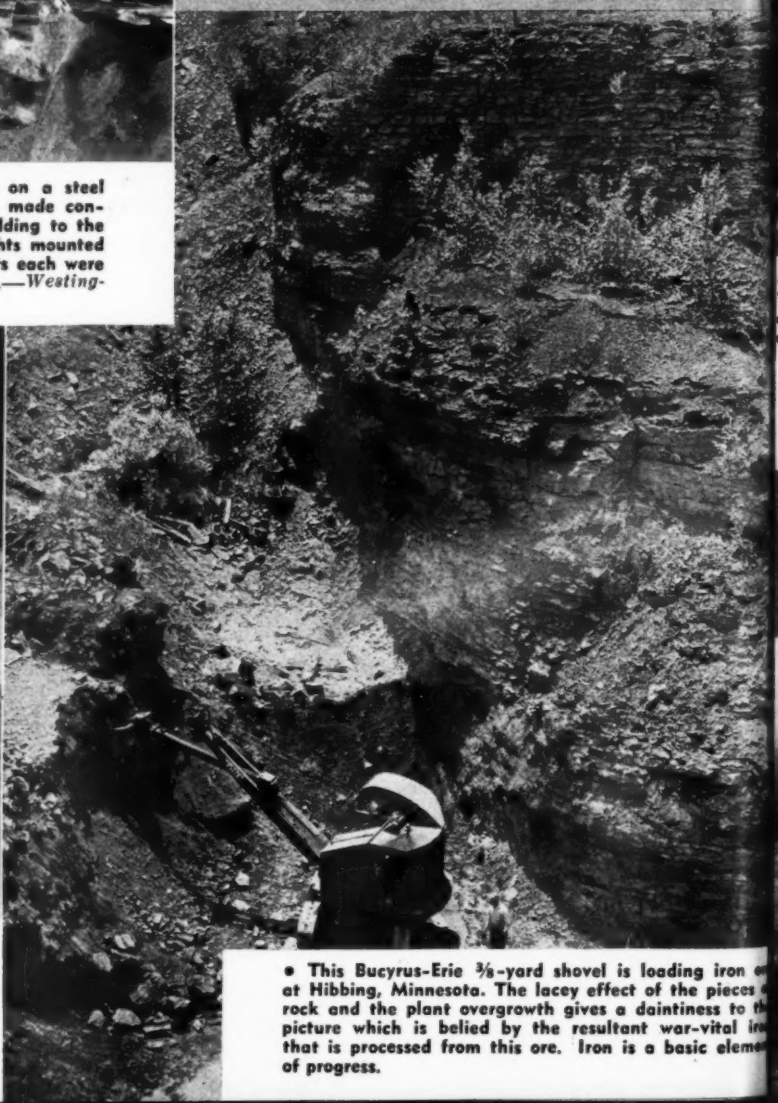
• The two drills prepare blast holes to break up the rock in a cut on a Missouri highway. The Thew-Lorain shovel loads the blasted rock on trucks which haul it away to fill in other sections of the road. Roads like this, started with excavation, are essential to progress.

PROGRESS *Starts with* EXCAVATING



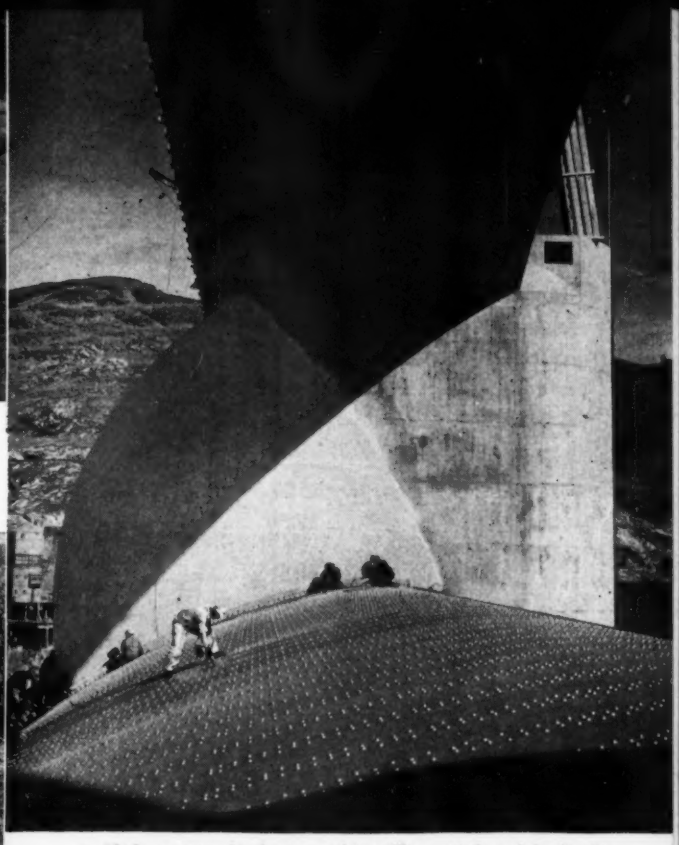
• Sixty-four Westinghouse floodlights suspended on a steel cable approximately 500 feet above Shasta Dam made construction progress possible for 24 hours a day. Adding to the general lighting are 92 24-inch diameter floodlights mounted on the head tower. Five portable groups of 10 units each were also placed at the strategic points around the work.—*Westinghouse Photo.*

• Native operators use United States equipment to grade this section of the Inter-American highway in Costa Rica which will play a vital part in the progress of that country. The bulldozer cuts a grade through the mountainous jungle. The natives on the right of the cut are picking large stones from the drainage ditch preparatory to laying pipe.



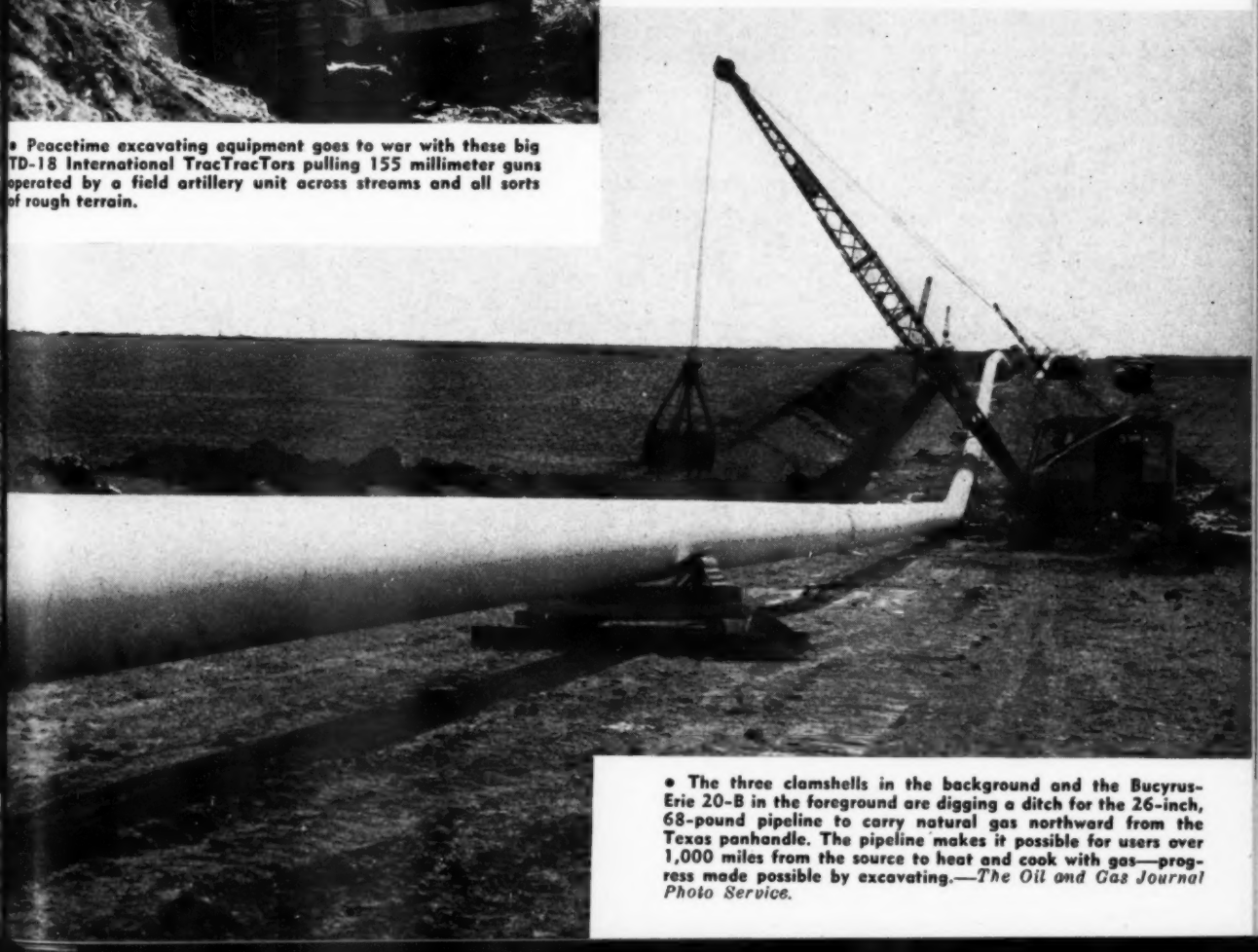
• This Bucyrus-Erie ⅜-yard shovel is loading iron ore at Hibbing, Minnesota. The lacey effect of the pieces of rock and the plant overgrowth gives a daintiness to the picture which is belied by the resultant war-vital iron that is processed from this ore. Iron is a basic element of progress.

• This Allis-Chalmers HD-14 tractor and Continental 10-yard scraper is stripping overburden from a Barytes mine. Barytes is used in the manufacture of over 900 products necessary for progress. Barytes weighs 5,000 lbs. per cubic yard. The ore is blasted, loaded on trucks with shovels and hauled to a crusher.



• If the pattern in rivets on this spillway at Grand Coulee Dam were Braille, it might well repeatingly read, "Power for war—Power for aluminum—Power for ships—Power for tanks—Power for planes—Power for progress."

• Peacetime excavating equipment goes to war with these big TD-18 International TracTracTors pulling 155 millimeter guns operated by a field artillery unit across streams and all sorts of rough terrain.



• The three clamshells in the background and the Bucyrus-Erie 20-B in the foreground are digging a ditch for the 26-inch, 68-pound pipeline to carry natural gas northward from the Texas panhandle. The pipeline makes it possible for users over 1,000 miles from the source to heat and cook with gas—progress made possible by excavating.—*The Oil and Gas Journal Photo Service.*

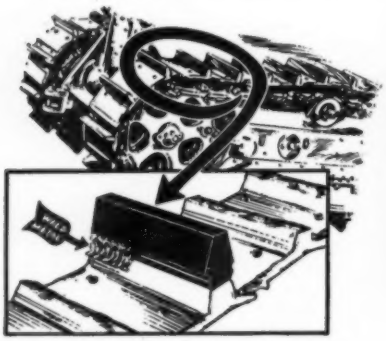
Equipment

you ought to KNOW ABOUT

Tractor grip-lug

Manufacturer: Allied Steel Products, Inc., N.B.C. Building, Cleveland, Ohio.

Claims: This new development makes it unnecessary to tear down the tractor track assembly and replace worn grouser-shoes with new parts. This is accomplished



merely by welding on to the old grouser-shoe a special steel bar with a groove and bevel to facilitate laying welding bead along the edge of the bar. The material is a special work hardening steel which often outlasts the original grouser.

Dragline bucket

Manufacturer: Universal Engineering Corporation, Cedar Rapids, Iowa.

Claims: This bucket has been designed throughout to withstand severe operating conditions. Ribbed reinforcing sections are present at all points of stress and wear. Combination bumpers and drag chains are used; the bumpers designed to ably take the shock of being dropped. These bumpers protect the arch and drag chains. Using the low hitch with weight well distributed, the bucket takes hold in tight material without a tendency to stand on its nose. Lips with either four or five teeth are available.

Pipe and stud extractors

Manufacturer: Reps Tool Company, Inc., 99 Wall Street, New York, New York.

Claims: These double purpose extractors are of forged tool steel with heavy square shank followed

For further details about the equipment on this page please write to the manufacturer, mentioning Excavating Engineer.

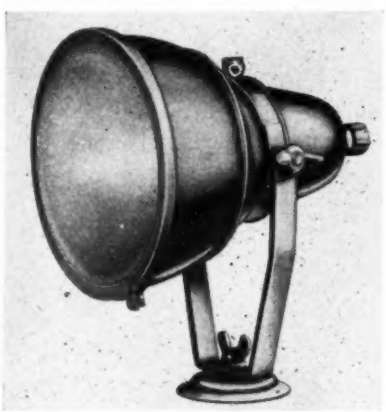
by a sharply tapered, short, reversed thread ending in a square reaming end. By inserting the tapered end in the broken stub of pipe, tube, or drilled screw or bolt and without any hammering it

is possible to obtain a powerful four-point grip. Ten extractors make up the set and cover the entire range of pipe from $\frac{1}{8}$" to 2" and bolts or screws from $\frac{3}{8}$" to $3\frac{1}{2}$".

Floodlight

Manufacturer: Pittsburgh Reflector Company, Pittsburgh, Pennsylvania.

Claims: This new floodlight, employing standard 200 watt incandescent, with silver-mirrored

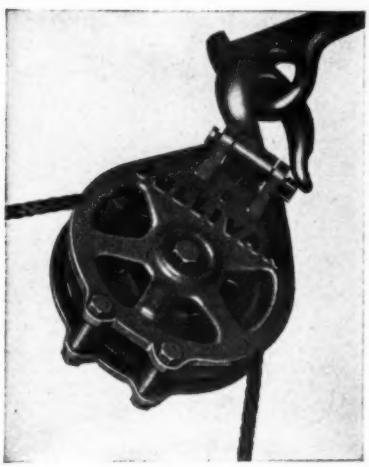


glass reflector, is used for fixed locations or for mounting on power shovels, bulldozers, trucks and cranes. Floodlight is shock-resistant and completely weatherproof. The light is $12\frac{1}{2}$" high overall and weighs $6\frac{1}{2}$ pounds. It has an adjustable bracket permitting 240° vertical and 360° horizontal swing.

Tail rope sheaves

Manufacturer: Sullivan Machinery Company, Michigan City, Indiana.

Claims: This is a special ball bearing sheave developed for rugged use in scraping. An extra wide sheave wheel reduces rope



wear. Openings are large enough to pass a square knot of rope. Easy rope change is possible through quick opening snatch block construction. Greasing is required but once a year.

Mobiloader

Manufacturer: Athey Truss Wheel Company, Chicago, Illinois.

Claims: The model W4-1 which operates with a Caterpillar D-4 tractor has numerous improvements over its predecessor model in the field for four years with simplicity in design being the chief change. The new model has increased stability, greater operating range, reduced height to simplify transportation and a lower center of gravity. The bucket capacity is $1\frac{1}{8}$ cubic yards.

Dust = Delay

● Dust on mining, industrial and construction jobs where heavy duty hauling equipment is used is much more than just a mere nuisance—it is a mighty costly item because it results in decreased efficiency of both men and machines. A diesel engine, for example, may be fitted with one or more air cleaners, but not even the finest filter can remove *all* the dust. Eventually, dust that is by-passed causes excessive wear on sleeves, bearings, pistons and other internal parts, causing premature failure and breakdowns. Moving parts which are lubricated and exposed are also damaged by the abrasive action of dust-laden grease and oil.

Time, money and equipment used in the elimination or control of dust on your jobs is a sound investment rather than an expense, and you will be helping to make hard-to-get replacement parts available for more of the equipment that must be kept in operation 'til victory.

The EUCLID ROAD MACHINERY Co.
CLEVELAND, OHIO

Note the excellent control of dust on the job views shown here. At the top, Rear-Dump EUCLIDS at work in a stone quarry, North Carolina; hauling earth and stone for a dam in New York; Euclid tractor with special water wagon for dust control and compaction work at a California dam; right, Bottom-Dump EUCLIDS on the haul road at an airport in Florida.

EUCLID

SELF-POWERED HAULING EQUIPMENT
For EARTH . . ROCK . . COAL . . ORE

CRAWLER WAGONS • ROTARY SCRAPERS • TAMPING ROLLERS

EUCLID THE PIONEER

Field NOTES

Clipping Wire Ropes

In these days, when replacements of wire rope or other equipment are hard to get and machine shutdowns are more costly than ever, clip fastening of wire rope is mighty important.

Clips should not be staggered, but should be applied with the base, or saddle, against the pulling rope and the U-bolt against the short end. Bolts on the clips should not be drawn too tightly and the clips should be evenly spaced at about six times the rope diameter or more.

Clips should not be drawn up too tightly against the rope, but neither should they be permitted to become loose. With the clips fastened, all nuts should again be tightened after the rope has been put under tension. Clips should be tightened with every rope inspection.

When inspecting clip fastenings, it is extremely important to examine the rope at the last clip farthest away from the loop or bight, as fatigue breaks often develop at this point due to the fact that rope vibration or whipping is dampened here. Fatigue damage is less pronounced with preformed wire rope, which may be explained by the reduced tendency of preformed rope to vibrate or, "whip"; this type of rope being more flexible and not so "springy," as non-preformed.

It is important to apply a sufficient number of clips, and the minimum number recommended for different sizes of rope is as follows:

Rope Diameter	Number of Clips	Spacing of Clips	Length of Wrench
½" to ⅝"	3	3"	12"
¾" to ⅞"	4	4½"	18"
1" to 1⅛"	4	6"	24"
1¼" to 1⅜"	4	7"	24"
1½" to larger	5–7	10"	24"

Basement Excavation in 1869

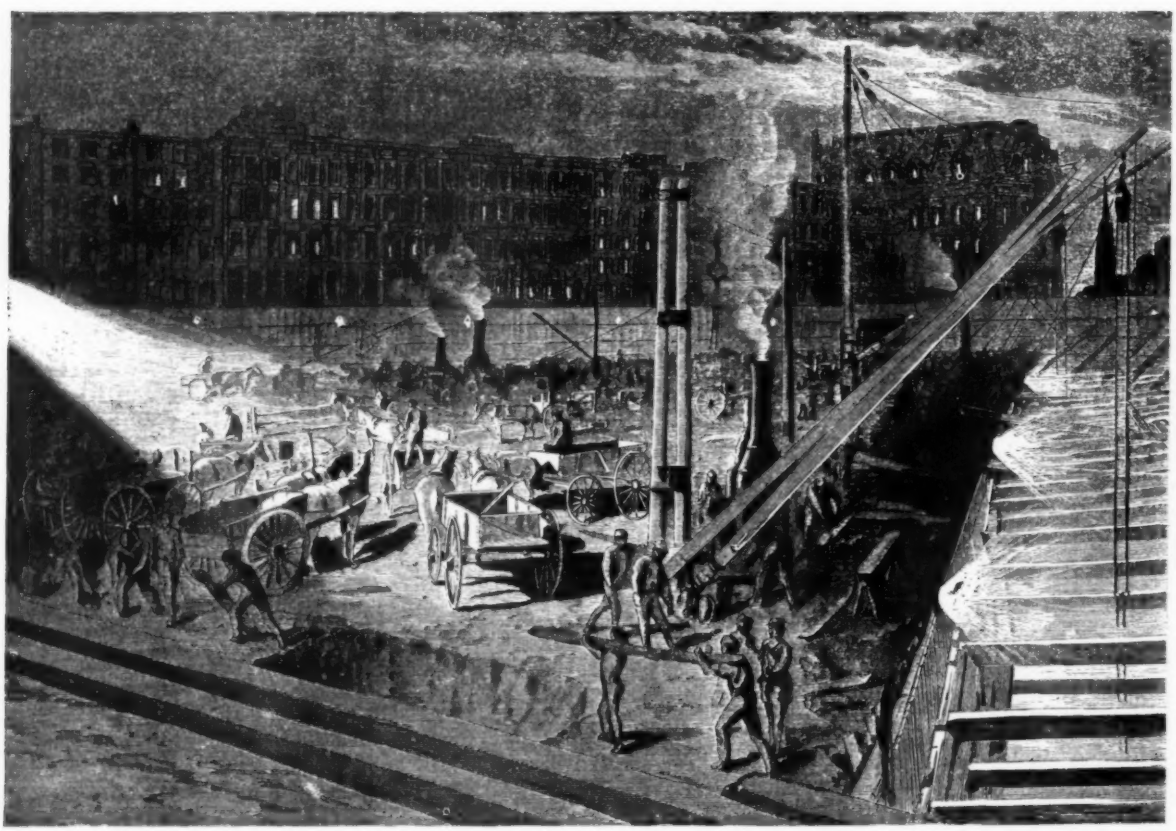
The illustration below reproduced from Frank Leslie's Illustrated Newspaper of November 20, 1869 — over 74 years ago — shows activities at midnight in excavating for the New York Post Office in City Hall Park.

In describing the picture Frank Leslie's Newspaper says:

"Persons frequenting the vicinity of City Hall Square after dark will probably notice bright lights within the enclosure about the site of the new Post-Office, and hear the puffing and clicking of steam-engines, and words of command passing from man to man.

"Eight hundred men, and nearly four hundred carts, are employed day and night. The ground is lighted by the aid of powerful Drummond lights, and as soon as one squad of laborers is exhausted, another is brought on, thus enabling the contractors to carry out their plans without an hour's interruption. The scene within the enclosure during the night is a very animated and a somewhat unusual one. The light almost equals the brightness of day, and as the visitor turns his eyes suddenly from the immense holes teeming with hard-working men

(Continued on page 462)



SAVE TIME

with

A WALKING ACTION

that lasts

The exclusive Bucyrus-Monighan Rolling Cam gives you a walking action that "cushions down" the machine at the end of each step with an ease that means long life. And the Rolling Cam is so built that Bucyrus-Monighan walking maintains its smoothness and efficiency even after years of hard service, without need for constant adjustments. The "cushioned" walking saves maintenance and repairs to the walking mechanism and to the entire machine. Lasting walking effectiveness has repeatedly been proved in the field by Bucyrus-Monighans which step out as positively, as surely and as gently after moving 15 or 20 million cubic yards as they did when they were new. If you have vital war digging to do, Bucyrus-Monighan efficiency will help you do it quickly and well.

G41

The 3-W usually uses 80 ft. to 90 ft. booms, 3 to 3½ yard buckets. Other models carry booms to 250 ft. buckets to 20 yards.

BUCYRUS MONIGHAN

Sold by BUCYRUS • ERIE

SOUTH MILWAUKEE, WISCONSIN

Shots from the FIRING LINE

Western States Provide Mineral Resources

The mineral resources of the Western States are providing a large part of the raw materials required in our country's war program for supplying arms and equipment to the United Nations. The development of many of the mineral deposits of the West, Secretary of Interior Harold L. Ickes stated, has resulted directly from testing and process development carried on at the Bureau of Mines' modern experimental laboratories at Salt Lake City, Utah.

About 200 engineers and skilled technicians are employed at this station to provide technical data for the mining industry, mine owners, and prospectors, and to do ore testing and process development for the Bureau's field crews exploring the mineral-bearing areas of Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

The chief function of the ore-testing laboratories is to select and adapt known methods to the treatment of specific ores, most of which are sent in by the Bureau's field engineers. Some of the more important ores now being tested by this group are listed as follows:

Arizona—iron ore from Maricopa, Yuma, and Navajo Counties; copper ore and tungsten ore from Pinal County; and manganese ore from Mohave County.
and other agencies 39 percent.

California—lead-zinc tailings from Inyo County; chromite ore from Siskiyou County; and copper ore from Calaveras and Plumas Counties.

Colorado—lead-zinc ores from Saguache, Lake, Ouray, and Clear Creek Counties; beryllium ore from Larimer County; copper-nickel-cobalt ore from Boulder County; tungsten ores from Gilpin, San Juan, and Boulder Counties; and fluorite ore from Gunnison County.

Idaho—lead-zinc ores from Custer County; copper-cobalt ores from Lemhi County; mercury ore from Valley County; and beryllium and mica ores from Latah County.

Montana—chromite ores from Stillwater County; molybdenum ore from Cascade County; manganese ore from Granite County; lead-zinc-copper-gold-silver ore from Lewis and Clark County; and placer tin from Jefferson County.

Nevada — lead-zinc and vanadium ores from Clark County; iron ore from Lyon County; manganese ore from Humboldt County; andalusite ore (a refractory) from Mineral County; and zinc sulfide ore from Eureka County.

Oregon — mineral-bearing beach sands from Coos and Curry Counties; chromite ore and cobalt-copper-gold ore from Grant County; antimony ore from Baker County; and mercury ore from Jackson County.

Utah—iron ore from Juab County; copper ore, tungsten ore, and fluorite ore from Beaver County; silver-copper-mercury ore from Washington County; alunite from Piute County; tungsten-bismuth ore from Tooele County; and manganese ore from Millard County.

Washington — lead-zinc ore from Pend Oreille County; iron and nickel ore from Chelan County; chromite ore from Skagit County; and molybdenum-tungsten-copper-gold-silver ore and lead-zinc ore from Stevens County.

Wyoming—vanadium ore from Lincoln County; tungsten ore from Fremont County; and sulfur ore from Hot Springs County.

• Caterpillar Diesel D4 tractor with bulldozer clearing bomb wreckage from the streets of Pantelleria, which lay in ruins when United Nations men moved in.—Acme Newspictures, Inc.

Virginia's Post War Plans

Virginia's State Highway Department announced August 5 the completion of plans and specifications for more than $12,000,000 in post war highway improvements which can be launched as soon as materials become available.

Fourth Generator in Action At Grand Coulee

Grand Coulee Dam's fourth massive generator has whirled into action sending more than a hundred thousand kilowatts of new power surging to the vital war industries of the Pacific Northwest, Secretary of the Interior Harold L. Ickes announced. The plant was constructed and is operated by the Bureau of Reclamation under the Department of the Interior.

The Secretary said that Harry W. Bashore, newly appointed Commissioner of Reclamation, had "advised me that two additional large generators are being installed at Grand Coulee for service before next February.

"Under a recent program announced by the War Production Board, the Bureau would be able to install a seventh big generator to be in service by 1945.

When SPEED is Essential

—Instantaneous Dumping Counts

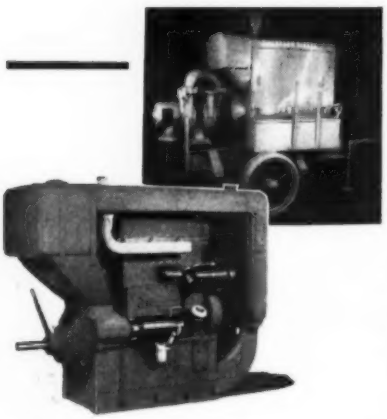
Koehring Dumptors have the war speed so vital for essential military projects. As in peace-time, Dumptors are now hauling dirt and rock at high speed for the armed forces, here and overseas. Instantaneous dumping saves seconds, increases trips per hour, assures full loads every trip. All types of material are dumped clean every time. Remember the Dumptor and its many cost-cutting features, when they are again available for peace-time projects.

KOEHRING COMPANY
MILWAUKEE • WISCONSIN

Depend on your Koehring distributor to help you keep your equipment operating. Care for your Koehring equipment NOW, so it will serve you tomorrow. Koehring distributors have genuine Koehring parts. Koehring parts warehouses are at your service.

HEAVY-DUTY CONSTRUCTION EQUIPMENT

Carver Pump Uses Sheppard "Packaged Power" for Low Operating Costs



WHEN Carver chose a power unit for their 350 g.p.m. 2-stage centrifugal pump, the choice was a Sheppard Model 6A 3-cylinder All American Diesel because (1) it guarantees their customers low operating costs and (2) it protects the Carver reputation as a manufacturer of dependable equipment.

Other leading construction, mining and refining equipment manufacturers install Sheppard Diesels because of their dependability and ease of installation.

The Sheppard continuous duty Diesel uses only ⅔ as much fuel as a gasoline engine generating the same H.P. . . . and at a fraction of the cost per gallon of gasoline. This efficient, trouble free engine is complete with radiator cooling, battery starting and clutch power take-off.

Look for Sheppard Diesel in any equipment you plan to buy. Write to Sheppard for further specifications and data on Sheppard "Packaged Power."

R. H. SHEPPARD COMPANY, HANOVER, PA.

"Packaged Power" Sheppard ALL AMERICAN Diesels

Work on this and two other big machines, ordered in 1941-42, was halted nearly a year ago by the diversion of materials to other war uses. These units are the largest hydroelectric generators in the world.

"The rated capacity of the Grand Coulee plant, with the latest addition, is more than 600,000 kilowatts—a volume sufficient to supply the normal power requirements of a city of 3,000,000 people. This total includes two generators of more than 70,000 kilowatts each transferred from Shasta Dam in California and which are now in operation. The capacity is second only to Boulder Dam as the world's largest hydroelectric plant, and with three additional machines installed by 1945 the capacity would be increased to nearly 950,000 kilowatts."

Army Licks Road Problem in Africa

When the United States troops invaded North Africa they found roads worse than backwoods trails in America. The problem was licked by Army engineers who perfected new techniques and equipment that resulted in laying out passable roadways in North Africa at the rate of four miles an hour.

Plans Made for New Toll-free Bridge Over the Rio Grande

The Texas State Highway Commission has ordered as a No. 1 post-war project the construction of a new high-water, toll-free bridge on the Pan-American Highway where it crosses the Rio Grande between Laredo, Tex., and Nuevo Laredo, Mexico. The present structure is a toll bridge.

OBITUARIES

J. CARSON AGNEW

Mr. James Carson Agnew, vice-president and director of Winston Bros. Company, constructors and engineers, died at Pasadena, California, on July 27. He would have been 61 years old on August 16.

Mr. Agnew directed the western operations of his company since 1932, when construction of Morris Dam was started for the City of Pasadena. In the ensuing years, Mr. Agnew devoted his administrative accomplishments to the construction of Coxomb and East Iron Mountain tunnels on the Colorado River aqueduct; the intake and Gene Pumping Plants; also a part of the Colorado River aqueduct; Imperial Dam at Yuma, Arizona; Brea Dam at Fullerton, California and Santa Fe Dam at Azusa, California.

The son of William Chandler Agnew and Mary McNaughton Agnew, Mr. Agnew was born at Youngstown, Ohio. He graduated from the Columbia University School of Mines in 1904 and after leaving school commenced his business career as an engineer for the Mahoning Ore and Steel Company at Hibbing, Minnesota. In 1910 he was appointed assistant general manager for this firm. From 1912 to 1919, Mr. Agnew was general superintendent of the Mahoning Ore and Steel Company, also acting as consulting engineer on the Susquehanna Mine for the Rogers-Brown Iron Company at Hibbing. During the years 1919 to 1923, he was assistant to the president of the Midvale Steel and Ordnance Company at Philadelphia, Pennsylvania. From 1923 to 1926 he served as president of the Agnew-Batteiger Company at Philadelphia, and for a portion of this time, 1924 and 1925, he was vice-president of the Rogers-Brown Iron Company.

Since 1929 Mr. Agnew has been director and vice-president of Winston Bros. Company of Minneapolis, Minnesota. He was appointed director of Pleasantville Constructors, Inc. of New York City in 1939.

The American Institute of Mining and Metallurgical Engineers; the American

• This old Bucyrus-Erie 50-B steamer is playing its part in the war effort driving piles for the construction of an ordnance plant.

No other war had landing barges like these

nor the modern *Preformed wire rope* to handle them

To swing a landing barge over the side and set it safely down on the water—that's another new problem of this new, hard, global war. Again Preformed Wire Rope has been selected, this time for the rope and slings that handle the barges. There seems no end to the war uses of Preformed.

In peace, men learned that Preformed Wire Rope could be depended on for greater stamina, longer life, protection of men and equipment, and lower cost. In war, such qualities are indispensable. So at *all* times Preformed is given the hard jobs. For detailed reasons—

Ask your own wire rope manufacturer or supplier

Society of Civil Engineers; the American Iron and Steel Institute; and the mining and Metallurgical Society of America were numbered among Mr. Agnew's professional interests.

Mr. Agnew was married to the former Margaret McLaren Edwards of Santa Barbara, California. Surviving Mr. Agnew are his widow, Margaret Edwards Agnew; four sons, George Edwards Agnew, Capt. James Carson Agnew II, U. S. Engineers, Capt. David Edwards Agnew, U.S.M.C., and Pvt. Seth Marshall Agnew, U.S.A.; one grandchild, James Carson Agnew III; and two brothers, W. Chalmers Agnew of New York City, and Duncan McNaughton Agnew of Carleton, Minnesota.

JOHN WATSON ALVORD

John Watson Alvord, 82, senior member of the prominent Chicago engineering firm of Alvord, Burdick & Howson, died July 31 at his summer home in Douglas, Mich., after a brief illness.

Mr. Alvord was one of the last of the engineers who designed the public improvements for large suburban areas now constituting a substantial part of Chicago. Following annexation of these areas to Chicago in the late 1880's, he organized and conducted the surveys for the World's Columbian Exposition under the late Daniel H. Burnham, Chicago works director, which coordinated and located most of the buildings that comprised the famous "White City" of 1893.

• Dynamite blast in a rock cut in Nicaragua during the construction of the Pan-American Highway.

GOULD GRANT RHEUBY

Gould Grant Rheuby, 74, who had retired as vice-president, director, and member of the finance committee of Hercules Powder Company on January 27, died at his home, Felicity Farm, Glen Mills, Penna., of angina pectoris on July 28.

Judge Rheuby, who would have been 75 on August 6, had served Hercules since April 1, 1913, only three months after it had commenced business.

He is survived by his widow, Mrs. Euphemia Rheuby; a son, William P. Rheuby; and two daughters, Dr. Virginia Rheuby of Felicity Farm and Mrs. C. J. Fenton of Bexley, Ohio.

Supply Construction Jobs With Over 7,000 Machines

More than 7,000 items of used construction machinery with an estimated value of $60,000,000 have been supplied for construction jobs during the past six months through the inventories of used construction equipment set up in the War Production Board's 12 regional offices, the Construction Machinery Division announced. The utilization of this machinery has saved a corresponding amount of new equipment representing some 120,000 tons of raw materials.

The inventories in the regional offices contain approximately 500,000 items, division officials said. Registration of used construction machinery was begun in the fall of 1942 with the issuance of Limitation Order L-196, which requires that new construction machinery be registered in the nearest regional office within 30 days of acquisition (Form WPB 1159). The over-all inventory is estimated to be 75 per cent complete with more registrations coming in continuously. Sales, rentals, and changes in service status—that is, use on projects other than those for which the machinery was originally bought—are also reported to the regional offices (on Form WPB 1333), and this procedure keeps the inventories up to date.

Construction machinery specialists attached to the 12 WPB regional offices and to ten district offices are charged with giving assistance to contractors, mines, industrial plants, etc., in locating idle used equipment and facilitating transactions for its sale and rental, the division stated. Because of their close

More Yardage with Less Labor

This Sauerman Slackline Cableway digs down to the bottom of a deep gravel deposit and hauls the material to top of screening plant at cost of 4c per cubic yard.

Here is a small Sauerman Scraper (¼ cu. yd. size) moving sand from stockpile to concrete products factory. One man running machine two hours per day supplies plant with sand, a job that formerly kept three men hauling sand 10 hours a day.

MAN-HOURS are vital these days. Every saving in labor on construction work is a direct contribution to the war effort. Sauerman Power Drag Scrapers and Slackline Cableways are chosen for excavating and stockpiling on defense projects because this simple, sturdy equipment has a 30-year record as a conserver of energy in moving all kinds of earth and bulk materials.

Sauerman machines not only reduce labor; they also save in other ways. The first cost of a Sauerman machine for the average long haul job compares favorably with the cost of any other equipment that will dig, haul and place an equal yardage of materials. Moreover, power requirements are moderate and the machine demands little by way of repairs, assuring a small daily expense.

Write for Catalog

SAUERMAN BROS., INC.
574 S. Clinton St., Chicago 7, Ill.

If you would bite out BIGGER PAY-LOADS

. . . put the job up to a Haiss HI-POWER Clamshell. You can tell from its picture here that there's brute strength enough to stand up to your toughest digging. But more convincing than that is the fact that the can't-be-kidded crane operators—who know a bucket for what it really can do—these men are saying right out, "Give me a Haiss HI-POWER and watch the yardage mount".

ADVANTAGES THAT PAY OUT IN EXTRA PAY LOAD PERFORMANCE

1. Exclusive 4-position wedge-lock dead ending of closing line—ratios up to 7:1.
2. Heavy-section corner arms to stand abuse.
3. Lower sheaves non-pocketed. No place for dirt to jam.
4. Cast-steel blade arms, rib-reinforced for unyielding stiffness.
5. Heaviest jaws of any bucket of its kind.

GEORGE HAISS MANUFACTURING CO., INC., 144th ST. & PARK AVE., NEW YORK 51, N. Y.

DISTRIBUTORS COAST TO COAST

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Write, wire or phone for prices, catalogs and deliveries

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

• A Sullivan heavy duty, semi-portable compressor on construction project in Montana handles five 55 lb. drills.

contact with local conditions they know when specific projects are nearing completion and when equipment will be available for other work. In this way they are able to extend and supplement the data secured through required registration.

Discuss Methods of Attracting Idle Machinery

Methods of attracting idle machines into the normal channels of distribution for resale were discussed at length by the Used Construction Machinery Industry Advisory Committee with WPB and other Government officials in Washington.

It was pointed out to members of the committee that many contractors who had worked on army camp construction are holding large stocks of equipment in idleness in the expectation of further construction.

Many contractors fail to realize that the need for new posts and stations is practically non-existent and that the holding of construction equipment in idleness in the expectation of future military contracts may be a definite obstruction to other vital war-time projects.

WPB officials reported that their regional offices constantly receive requests for machines for a wide variety of civilian uses. Members of the committee suggested a number of methods of attacking the problem and asked that they be discussed at a future meeting.

Its immediate action was to formulate recommendations to be made to various Government agencies designed to stimulate the flow of idle equipment into channels leading to immediate use.

The rapidly changing conditions in the construction business were discussed and committee members pointed out the need for changes in certain procedures to meet changed conditions.

The critical repair parts situation and the problems of reconditioning and general repair, they stated, particularly affect the putting of used equipment to work.

The committee asked that an early date be named for its next meeting.

Flood Protection Project

Approximately 100,000 cubic yards of common channel excavation and 20,000 cubic yards of rock excavation will be included in additional work to be done on the Willis Creek Flood Protection project in Brown county, Texas, by the U. S. Engineers, Galveston, Texas.

Plan Material Disposal on Halted Projects

Where construction projects are halted through the issuance by the War Production Board of revocation or stop orders, contractors will be advised in the future to contact redistribution officials of the appropriate regional office in regard to disposal of material purchased for projects which have been halted.

The Redistribution Division of WPB will assist contractors in disposing of material and equipment made available as the result of the issuance of revocation or stop orders.

A paragraph embodying this suggestion to contractors will be added to revocation orders issued in the future.

Probe of Road Maintenance Sought

Investigation by the House Roads Committee of the construction and maintenance of highways, including allocation of materials, equipment and manpower is called for in H. Res. 243 by Representative J. W. Robinson (D., Utah), Chairman of the Committee. The resolution would require periodic reports to the House of Representatives

ARMY E NAVY

ONAN
ELECTRIC PLANTS

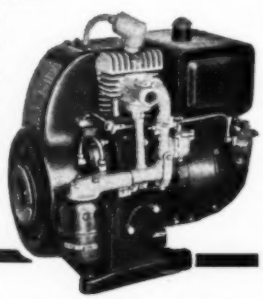
Electricity for Any Job—Anywhere

ONAN GASOLINE DRIVEN ELECTRIC PLANTS provide electricity for Contracting and Engineering projects in locations where power is not available, and for Emergency and Standby Service.

Thousands of these reliable, sturdy plants are doing a winning job on all the fighting fronts by providing electricity for many war tasks.

Ratings from 350 to 35,000 watts. A. C. 50 to 800 cycles, 110 to 660 volts. D. C. 6 to 4000 volts; or dual A. C. and D. C. output. Air or water cooled.

Details gladly furnished on your present or post-war need for Electric Plants.



D. W. ONAN & SONS
1854 ROYALSTON AVE., MINNEAPOLIS, MINN.

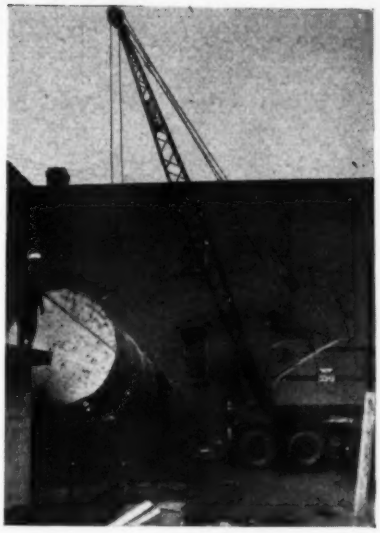
and would empower the Committee to recommend "pertinent" legislation.

Construct New Rights-of-way, Eliminate Tunnels

To speed war transportation between the East and West, 850,000 pounds of dynamite are being used on one railroad alone in Western Pennsylvania and Eastern Ohio to construct new rights-of-way and eliminate old tunnels. Present day transportation demands are making some of the old railroad tunnels obsolete. Some of the larger modern engines and cars cannot pass through these tunnels which often have only one or two tracks, causing "bottlenecks".

Near Burgettstown, Pennsylvania, 27 miles southwest of Pittsburgh, the Pennsylvania Railroad is eliminating one of its old tunnels by building an open cut about 4500 feet long. Some 500,000 pounds of dynamite will be used on this job. When completed, the cut will be 74 feet wide at the base and 120 feet deep at one point. Some 125,000 cubic yards of dirt and 900,000 cubic yards of rock will be removed. Groves, Lundin & Cox, of Minneapolis, are the contractors.

Another tunnel, on the same railroad, to be eliminated by a new by-pass is located near Cadiz, Ohio, about 25 miles northwest of Wheeling, West Virginia. About 350,000 pounds of dynamite will be needed to make the new right-of-way, also about 4500 feet long. It will be 60 feet wide at the base and 75 feet deep. This new construction will necessitate the blasting and removal of 500,000 cubic yards of rock and the excavation and removal of 200,000 cubic yards of dirt. The contractors are the Mauger Construction Company, of Columbus, Ohio.



• Pratts Express Co. of Minneapolis is using a Bucyrus-Erie 22-B transit crane to load a 7,000-pound tank, 32 feet long and 12 feet in diameter, from its bed to a truck trailer to be hauled to the railroad for shipment to Kansas.

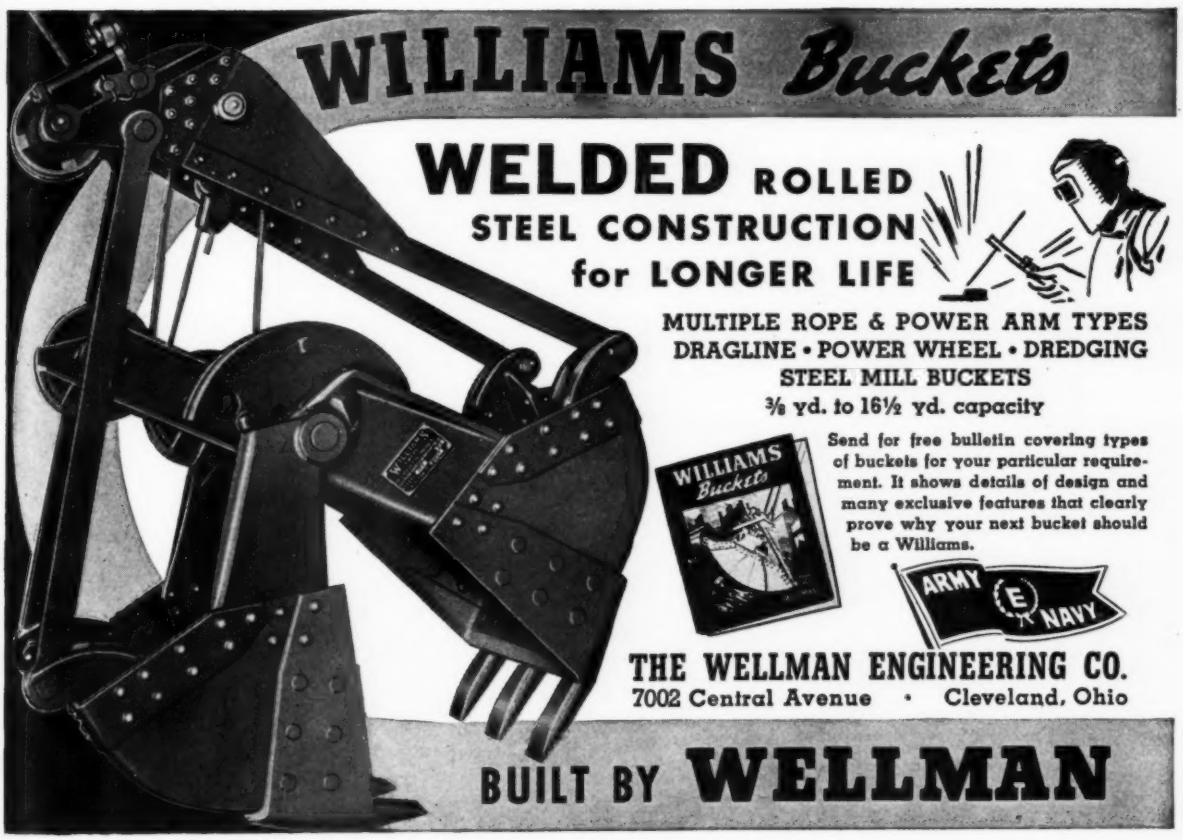
Construction of the cut-offs will require the most efficient use of explosives with the work being pushed as rapidly as possible without interfering with daily train movements.

Green Mountain Dam Power Plant Put in War Service

The Bureau of Reclamation has placed its 30th power plant in war service, Secretary of the Interior Harold L. Ickes announced.

The plant is located at Green Mountain Dam in western Colorado, and is a part of the Colorado-Big Thompson project, the primary purpose of which is to provide a supplemental irrigation water supply in northeastern Colorado. The power from the new plant will serve Denver and other areas where there are expanding war industries.

When the plant's first generator began commercial production, more than 10,000 kilowatts of new war power became available, Acting Commissioner Harry W. Bashore reported to the Secretary. Ultimately six other power plants will bring the potential annual output of the Colorado-Big Thompson project to about 900,000,000 kilowatt hours, equivalent to the 1941 output of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all the generating capacity in the state of Colorado.

"Today's event on this project places the accent on war, but when the last bullet has been fired and all features of this development are completed, its peacetime benefits will be equally significant," Secretary Ickes declared. "The project will provide a supplemental supply of water to 600,000 acres of highly productive land in an area where the annual crop losses have averaged as high as $5,000,000 due to water shortages. More than 175,000 people in the region are dependent almost entirely on the irrigated agriculture. Construction of the other features of the project has been halted by the diversion of materials to other war uses."

The irrigated lands of the Colorado-Big Thompson development are situated on the eastern slope of the Continental Divide. The needed supplemental water will be brought from the headwaters of the Colorado River on the western slope through a huge tunnel being bored through the Rocky Mountains.

The storage reservoir was included in the project to protect water users in the Colorado River basin on the west side of the Rockies against loss of their supply by diversion through the trans-mountain tunnel. The dam, 274 feet high and 1060 feet long, is the second highest earth-fill dam in the United States.

All construction with the exception of the Green Mountain Dam and power plant is at a standstill, having been halted last fall by an order of the War Production Board diverting critical materials to other war uses. The Bureau of Reclamation is prepared to resume construction of the partially-completed tunnel and other features as soon as authorization is given and men and materials are made available.

Maine Towns Rent Equipment from Commission

By F. N. Hollingsworth

There are over 500 towns in Maine that each year cooperate with the state in the construction and maintenance of state-aid and third class roads. Many of the towns are small, and it has not been possible in some cases to buy road building equipment such as power shovels and compressor drills. The state has gradually been accumulating such equipment. The shovels, principally of ⅜ and ½-yard capacities, are rented to the towns, with the rental charged separately to the job on which the equipment was used. Over a period of years a sufficient amount is cleared in the various operations to replace the unit with a new one.

The state highway department has at present about 80 power shovels and a large number of gasoline compressor drills. This rental plan has worked out successfully and provides much greater efficiency to carry on the work which, previous to adoption of the rental plan, had in most cases been done by manual labor.

This type of work, construction and maintenance of secondary roads, was carried on even before state highways were established. For several years the state has been setting aside between $800,000 and $900,000 for construction of state-aid highways to be used with town funds appropriated for the same purpose. Towns have appropriated, in round numbers, approximately $450,000 each year, so that there has been about one and a quarter million dollars collected annually for this cooperative work. In addition, Maine has set aside each year, from general highway funds, about $670,000 for construction of third-class highways. The location is the only difference in the type of work. In the case of third-class highways, the state pays the entire cost.

Towns furnish a maximum of $30 a mile for each mile of improved state-aid highways for maintenance and the state pays the balance. Nearly all this work, except for that in some of the

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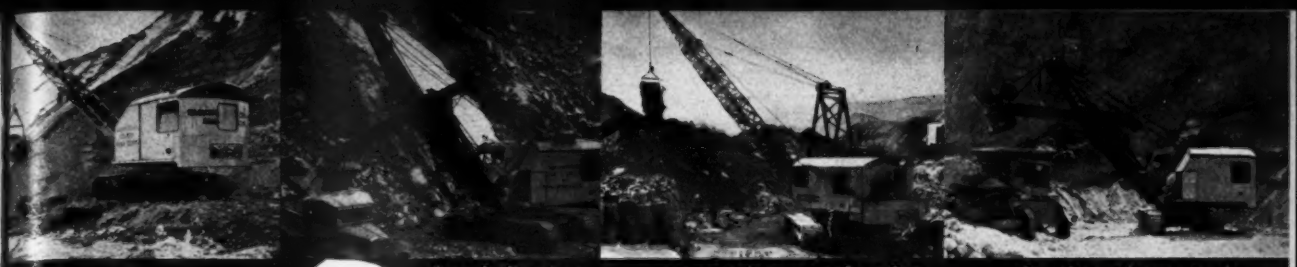

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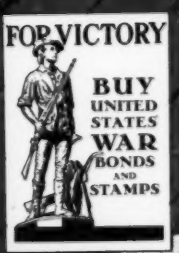

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larger towns, consists of gravel roads with a surface treatment of bituminous material, usually tar, and is done under general state highway department supervision by on a day-labor local crews under local superintendents.

From 1938 to 1942, inclusive (during 1942 there were no new projects), mileage construction totaled 208.53 and mileage reconstruction, 20.85, for plain gravel surface. Cost per mile ranged from $6,776.70 in 1938, to a high of $7,041.94, for third-class roads in 1942. Cost of tar surface treatment averaged between $800 and $900 per mile. State-aid road construction for the same period totaled 436.11 miles for new construction and 216.63 for reconstruction. Mileage cost varied from $7,005.40 per mile in 1938, to $6,178.32 in 1942, with tar surface treatment of $800 to $900 per mile extra. Cost of surface treatment is kept separate from the plain gravel cost.

Central Valley Irrigation Helps Agriculture

The increased agricultural production possible in the near future from areas capable of being served with irrigation water from project works is indicated in a statement prepared on Problem 2 of the Central Valley Project Studies, according to a report on the progress of the Studies made public by the United States Bureau of Reclamation.

The report, prepared by Field Coordinator George W. Howson, reveals that during April the committee for the study of Problem 2 completed a report which includes recommendations for a construction schedule on existing features of the Central Valley Project.

The committee studying the requirements for wartime industrial and domestic water in areas which could be served from Central Valley Project works has its report in the final stage of preparation. It is to be issued on receipt of a statement being prepared by the California Railroad Commission concerning the water requirements of Vallejo and Benicia where rapid population increases have raised a question about the adequacy of the existing water supply.

American Highways Cost Billions

There are 500,000 miles of designated state highways, 300,000 miles of city streets and 2,400,000 miles of undesignated rural roads in the United States. It is estimated that approximately 25 billion dollars have been expended since 1910 on designated highways, city streets, and rural roads exclusive of relief expenditures which would jump the total to $29,500,000,000.

Mines and 'Booby Traps' Job of Engineers at Front

To every streamlined infantry division and every armored division is attached a battalion of combat engineers, who play a part in the theatre of military operations similar in versatility and forehandedness to that of the property man in a Chinese play. Suppose the division is advancing against long-held enemy positions. Everything roundabout is likely to be mined. Big mines and traps for tanks, small mines and booby traps for unwary or over-eager infantry. It's the engineers' job to detect and render harmless these explosive souvenirs left by a retreating enemy, according to Captain Dana R. Tyson, corps of engineers.

Or if our side is retreating, or "withdrawing to previously prepared positions," it's the engineers who previously prepare those positions with pick and shovel. Then they hurry up to where the rear guard is holding off the enemy, lay packages of explosives under bridges which they blow sky-high, and finally turn ingenious but wilfully murderous practical jokers by scattering mines and booby traps for the enemy. Maybe the people at headquarters expect a hostile tank attack and haven't tank destroyers and artillery to spare at a certain point. Up come a few engineers with axes, profanity and some links of chain and employ all three in construction of log barricades. Against these the tank's caterpillar treads go round and round without getting anywhere; and the infantry, and probably the engineers who have been lurking hopefully in the neighborhood, take over, and it's just too bad for the persons left in the tank.

Blastmen, powdermen and demolition experts are needed by the Corps of Engineers, as well as many other skilled technicians in the construction business.

During 1943 thousands of trained specialists will be building roads, constructing bridges, laying mines and constructing tank-traps on the many battlefronts in which this nation is engaged.

If you feel that you might qualify for engineer service, Captain Tyson urges you to call in person or write to the office of the Sacramento District Engineer, 1209-8th Street, Sacramento, California.

Mineral Industries Set Production Record

With a smaller working force in 1942, the United States produced in dollar values ten per cent more mineral products than in 1941 and exceeded the all-time high year of 1920 by eight per cent, according to reports prepared by the Bureau of Mines of the Department of the Interior. The total value of all mineral products last year—the first full year of United States participation in the present war—was more than 7½ billion dollars. This record performance was accomplished in the face of a manpower reduction in the mineral industries reported at three per cent under 1941, 26 per cent below 1920, and 30 per cent under the peak employment and war year of 1917.

The number of persons employed in the mineral industries of the United States during each year since 1914, the year in which the First World War began, is shown in the accompanying table. The figures cover mines, quarries, mills, smelters, and coke ovens, and they show a reduction of approximately 260,000 employees from 1914 to 1942.

While the mineral industries were in operation over a larger number of workdays during 1942 than during 1941, it is probable that the chief explanation of the ability of these industries to meet the needs of the Nation for iron,

(Continued on page 460)

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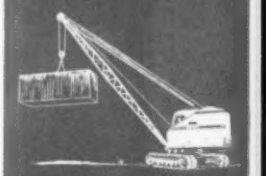

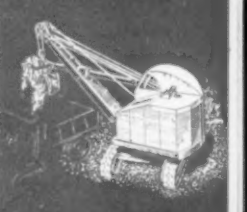

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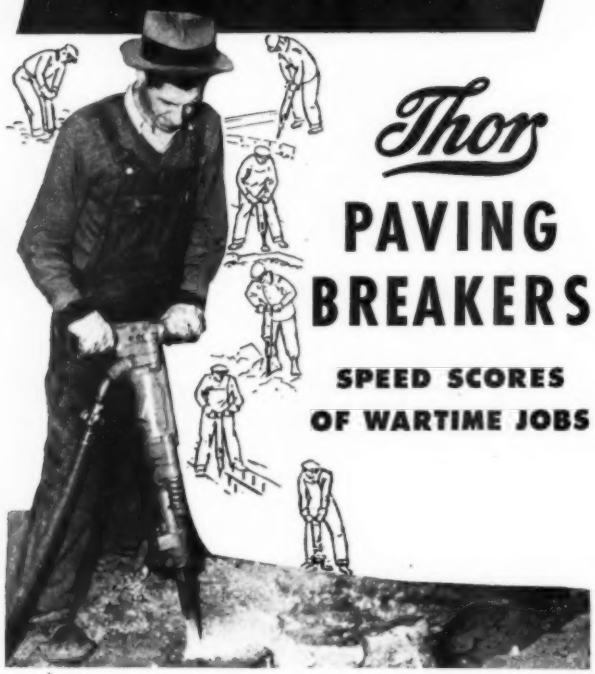

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(*Continued from page 456*)

copper, coal, and other minerals with a notably smaller working personnel in recent years than in earlier years is the great advance in mechanization. The replacement of hand methods by mechanized methods of operation, and the improvement in organization and coordination of effort that often follows mechanization, have greatly increased the productivity of labor per man-hour of work, and it is this fact, as stated, perhaps more than any other single factor, that accounts for a marked increase in production in the face of a decrease in the number of employees.

Tests Indicate Sand Best Stemming Material

Recent tests by the Bureau of Mines regarding the efficiency of various types of stemming for 40 per cent ammonia gelatin dynamite in blasting rock indicate that sand is the best material for confining explosives to boreholes under conditions in which the experiments were conducted, Dr. R. R. Sayers, Director of the Bureau of Mines, informed Secretary of the Interior Harold L. Ickes.

A report prepared by John A. Johnson, mining engineer in the Bureau's Safety Division, and Wing C. Agnew, superintendent of the Bureau's Mt. Weather Testing Adit, near Bluemont, Va., describes the use of various stemming materials and points out their advantages and disadvantages. It is the sixth in a series of reports on stemming tests conducted at Mt. Weather to promote more efficient use of explosives in metal mines.

In addition to sand, the following other materials were used in the stemming tests: Clay, mineral wool, vermiculite, limestone screenings, commercial hydrated lime, noncombustible blasting plugs, pulverized limestone, and used cardoxide, a chemical material employed as a carbon dioxide absorbent in respiratory apparatus. Charges also were fired without stemming and with primers in cardboard tubes.

Johnson and Agnew said that while sand proved to be the most efficient stemming material in the rock (basalt) blasted at Mt. Weather Testing Adit, "changes in conditions or procedure might affect any or all of the results obtained."

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TRUCK DIVISION **ELMIRA, NEW YORK**

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Field Notes

(Continued from page 444)

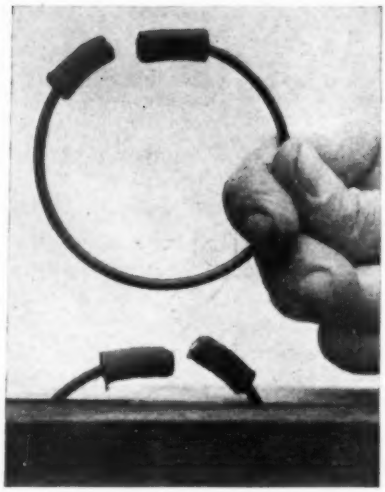
and horses to the sky above, it seems as if a dark, impenetrable veil was suspended over the spot but a few rods above the ground. The effect of the strong light around, the black canopy above, and the moon and stars glimmering from horizon to horizon, is peculiarly singular."

Rattle Take-ups

Many of the movable parts about a machine cab and other moving lightly constructed portable portions soon develop aggravating rattles due to continual vibration. Often these rattles cannot be taken care of properly on short notice and require considerable work to completely eliminate. Wedges are useless and difficult to make to suit the parts causing the noise.

Rather novel, but quite satisfactory, anti-rattlers for large parts can be quickly and easily made.

Cut off the larger ring portions of a number of old auto seat or cushion springs, and wrap the ends with tape if it is handy. These springs can be readily and easily shoved in between boards, sheet metal plates, heavy weather strip and almost any other place that is as wide as the diameter of the spring wire. There is enough compression in the stiff springs to quiet almost any of the larger vibrating and rattling parts. These spring wires will stay firmly and snugly in place and the taped ends make them easily and safely handled. They will last indefinitely and can be used where wood wedges would be out of the question.—*Frank W. Bentley, Jr.*



• An easy method to end aggravating rattles about a machine cab or other moving lightly constructed portions of a machine.

Anti-freeze Tests

Simple tests have been devised by the United States Bureau of Standards at the request of the Office of Defense Transportation to help truck and automobile owners determine whether or not the anti-freeze solutions in their vehicles are safe. The fact that many machine owners and motorists leave anti-freeze mixtures in the radiators during the summer months makes it doubly important that only a safe anti-freeze be used.

Unless car and truck operators are sure they are using safe mixtures, they should make the following two tests devised by the U. S. Bureau of Standards at the request of the Office of Defense Transportation, in the order given:

For distilled oils:

Draw a small amount of mixture from the radiator and add to a glass of water. If the radiator mixture floats noticeably on the water, the anti-freeze contains injurious kerosene fuel oil or naphtha.

For harmful salt solutions:

Drain a cupful of radiator mixture into a clean tin can, and boil until all liquid has evaporated. If a substantial white or crystalline coating remains, the solution contains salt.

Building Roads

(Continued from page 437)

bite needed to dig into the slippery, slimy mud.

Equipped with such machines, engineer troops found ingenious routes possible to them. Near Massacre Bay they used a graveled stream bed as a principal supply route. Elsewhere they used their ever-present bulldozers to cut away the soft soil down to a fairly firm road bed.

With the trails twisting around the many small ridges, the tractor drivers had to violate one military rule. Instead of keeping low they were often forced to stand up to see over the earth bank obscuring the traffic ahead.

One cat-skinner delivering ammunition was cussing out Yank artillerymen for the shell fragments clanking against his machine when he found that the shells were Japanese, not American. He had run his tractor right into the front lines.

Next improvement engineers suggest for their tractor-bulldozers is a machine gun mount. They already do everything else but shoot.

Tanks produce results only in actual combat on the firing line.

To conserve their fighting capacity they ride to battle on Rogers Trailers, or if damaged are transported to the rear for repairs on a retriever type of trailer especially equipped to load disabled tanks.

Meanwhile, thousands of standard Rogers Trailers are serving efficiently on our factory fronts or in transporting defense equipment to various fortifications.

ROGERS
LOW BED-
-HEAVY DUTY
TRAILERS

ROGERS BROTHERS CORP.
ALBION, PENNA.

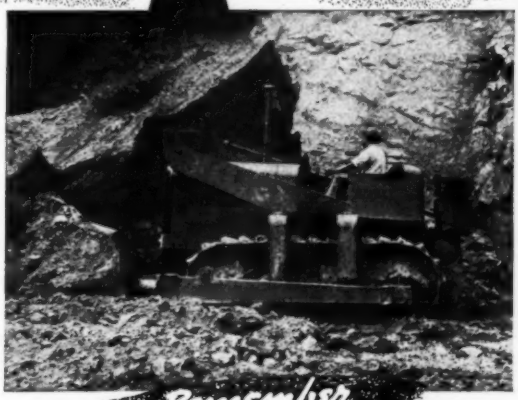
. . . and it's worth keeping!

THE leading tractor manufacturers have invested millions of dollars perfecting and refining their machines to give you, among other advantages, engineered balance for maximum performance.

Buckeye Cable Controlled Tractor Equipment is correctly designed to maintain that balance when installed on your tractors.

Buckeye builds a dozer and power control unit for every standard make and model of tractor, each designed specially for the tractor with which it is to be used.

In the future when you consider dozer equipment, *remember Buckeye for balance.*

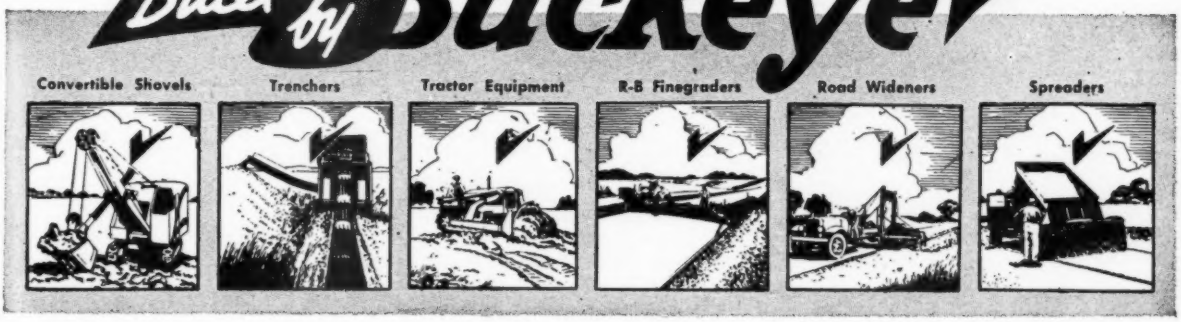


Remember BUCKEYE *for* BALANCE!

CHECK PAGE 429

BUCKEYE TRACTION DITCHER CO.
Findlay • Ohio

Built by Buckeye



Timber for Steel

(*Continued from page 439*)

55-foot booms, 15,000 pounds; one 750 Lima, 95-foot boom and 20-foot jib, 6,000 pounds; one 802 Lima, 95-foot boom and 20-foot jib, 7,600 pounds; one Northwest Model 80, 95-foot boom and 20-foot jib, 6,200 pounds; one Lorain truck crane, 85-foot boom and 20-foot jib, 5,000 pounds; one 1201 Lima, 100-foot boom and 20-foot jib, 85,000 pounds, and one 2-yard Bay City with 85-foot boom, 72,000 pounds. The above listing weights are on standard boom lengths from factory.

The size and number of cranes used on any particular size truss is a variable that is handled by the operators and governed by the operators' experience. While erecting a building in Kansas, Timber Structures, Inc. operators were sure they could lift 160-foot curved arches with one good crane but the district engineer insisted the erectors use two cranes, much to their disappointment and expense. A while later, the company was called upon to erect the same truss at Boeing in Seattle and one of the experienced men handled the job nicely with one crane.

Largest Wooden Buildings

Timber Structures, Inc., is the principal contractor for the largest wooden buildings in the world, the Teco connected blimp hangars being erected at strategic points along the nation's sea fronts. Timber Structures, Inc., holds contracts for 13 of these buildings which house the lighter-than-air fleet being recruited to fight the submarine menace. These great buildings are 1,000 feet long, 240 feet wide, 185 feet in overall height and 153 feet in effective height, large enough to house six of the helium-filled patrol ships of our rapidly expanding naval dirigible service.

Operating from a large inventory ranging from eight to ten million feet of truss timber, Timber Structures, Inc., has fabricated, shipped and erected many large projects before deliveries could be made from the source of of supplies, sawmills. Subsequent deliveries from sawmills replenish the live inventory. This has enabled the speeding up of many projects.

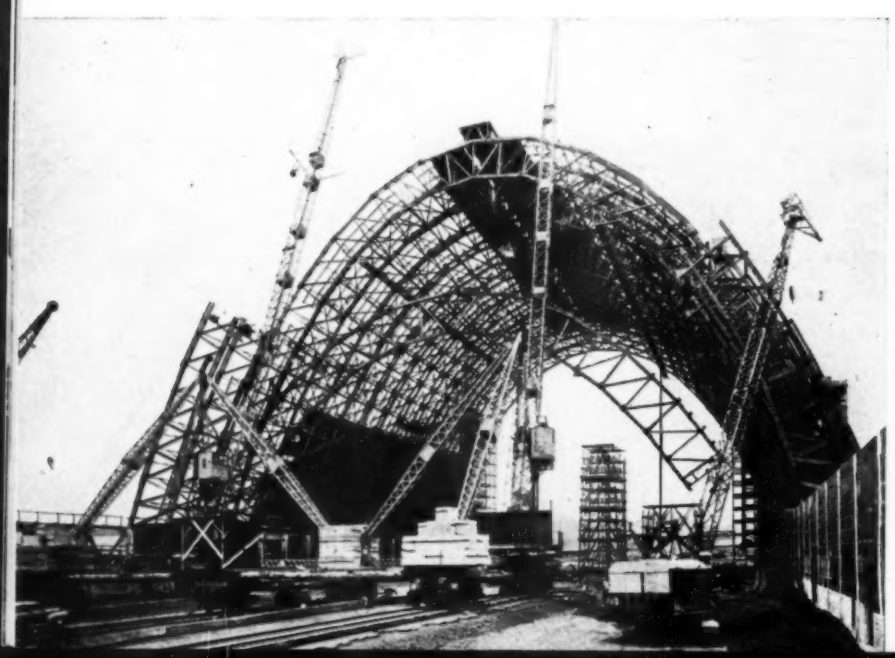
During 1942 the company fabricated approximately 4,000 carloads of timber. In much of this work they also furnished design and erection. Where erection is handled by others, Timber Structures, Inc., includes all hardware, member schedules, erection diagrams and all members are marked. Each unit is precisely prefabricated from checked templates.

Fireproof Treating

Fireproof treating of timber, which has developed tremendously in 1942-43, has been employed on those military objectives located where they may be subjected to incendiary bombing. The treatment consists of injecting heavy concentrations of fire retardant chemical salts into the prefabricated timber by temperature, vacuum and pressure. The treatment provides a material that will withstand the A.S.T.M. standard flame test and is recognized as fire resistant by underwriting insurance companies. This treatment, known as the Protexol treatment, is the development of 30 years research and is available at the treating plants of Timber Structures, Inc.

The development of Timber Structures, Inc., is the result of years of hard work by its principal and owner, Ward Mayer of Portland, Oregon. Mr. Mayer spends his time between an engineering and administrative office in New York, and the home office in Portland where a large engineering staff is also maintained. The Portland plant has a 20-acre unit devoted to mass production, precision, and service. It is located in the heart of the Douglas fir lumber region. To facilitate service to eastern projects, Timber Structures, Inc., is developing a warehouse and fabricating plant at Trenton, New Jersey, where a nominal inventory will be carried to permit immediate delivery to eastern projects, which can be supplemented by larger shipments from the main plant at Portland.

• **Fireproof treated timber at Naval blimp hanger at Tillamook, Oregon, fabricated by Timber Structures, Inc., and erected by Sound Construction and Engineering Co., of Seattle under the direction of R. H. Lukens, project manager. Erection equipment consists of two 30-ton capacity stiff-leg derricks with 190-foot booms and 30-foot jibs mounted on seven flat car trucks, and three crawler cranes with 90-foot booms and 15-foot jibs with lifting capacities of 15 tons at 12 to 15 feet radius. The crawler cranes were used only to assist the derricks to raise the arch section. The raising operation of all five machines was coordinated so that once the truss arch section was lifted clear of the ground it never touched the ground thereafter. When the arch was raised to vertical position, the balance of the erection work was carried on by the stiff-leg derricks.**



If you want your wire rope to last

DON'T FORGET LUBRICATION!

LACK of proper lubrication is one of the most frequent causes of premature wire rope failure. Yet lubrication is such a simple means of extending rope life that it seems incredible that rope users ever overlook it. But they do.

Every U·S·S American Tiger Brand Wire Rope comes to you from the factory, properly lubricated and ready for service. But factory lubrication, no matter how efficient, will not last the life of the rope. Field lubrication at regular intervals is absolutely essential. Wire Rope is a machine, composed of many working parts. It requires lubrication to reduce frictional wear.

Use a well-tested lubricant like Tiger-Lube which has been developed through years of study and research. Be sure that the rope surface is clean and that the lubricant is applied uniformly and thoroughly.

Lubrication is insurance against corrosion and is the safest way to prevent excessive internal and external rope wear. Lubrication will materially assist in controlling the wear on sheaves and drums and in prolonging rope life, resulting in increased operating efficiency.

SEND FOR THIS BOOK
—IT'S FREE!

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York

Excellay Preformed

UNITED STATES STEEL

NOT in the *Contract*

An old farmer and his wife were standing before their pigsty looking at their only pig, when the old lady said: "Say, John, it will be our silver wedding tomorrow. Let's kill the pig."

John replied with d i s g u s t: "What is the use of murdering the pig for what happened 25 years ago?"

Girl Customer: "Does this lipstick come off easily?"

Cosmetic Clerk: "Not if you put up a good fight."

A young lady and her aunt, returning home from work on pay day, were relieved of their money by a stick-up man. The lady rushed over to the nearest policeman and exclaimed:

"I've been robbed of my pay and my aunt's pay!"

"Cut out the pig Latin and tell me what happened," the officer ordered.

Plumber (arriving late): "How have you managed?"

Householder: "Not so badly. While we were waiting for you to arrive, I taught the children to swim."

"I'm sorry," said the diner who hoped to get away with it, "but I haven't any money to pay for that meal."

"That's all right," said the cashier, "we'll write your name on the wall and you can pay the next time you come in."

"Don't do that. Everybody will see it."

"Oh, no they won't. Your overcoat will be hanging over it."

Warden: "So you think you are actually sane now. If we give you your liberty, will you leave liquor and women alone?"

Inmate: "I sure will."

Warden: "You'd better stay here. You're still crazy."

"Yes sir, boys, these new glasses are just what I needed."

Pretty Caller: May I see the manager?

Fresh Clerk: Sure. He's always anxious to talk to pretty girls.

P. C.: Well, tell him his wife is here!

Cowboy: "What kind of a saddle do you want—one with a horn or without?"

Dude: "Without, I guess. There doesn't seem to be much traffic on these prairies."

"Say, you must think you're a pretty hard guy, don't you?"

"I am—I wasn't born, I was quarried."

He: "Are you going to work overtime again tonight, dear?"

She: "Yes, I made a mistake last night and the boss wants me to do it over again!"

Teacher: "Who was the first man, Junior?"

Junior: "George Washington."

Teacher: "Why no, Junior. You ought to know better than that. It was Adam."

Junior: "Oh well, I wasn't counting foreigners."

"Oh, Mummy," said wee Annie, "Look at that funny man across the street."

"What's he doing?"

"He's sitting on the sidewalk talking to a banana skin."

"You should be more careful to pull your shades down at night. Last night I saw you kissing your wife."

"Ha, ha, ha! The joke is on you. I wasn't home last night!"

On the witness stand the plaintiff was asked to tell about his marital relations. "They're all right," he said, "but they always want to live with me."

"Certainly I respect your legal advice, Mr. Bell, but what good is alimony on a cold night?"

ONE OF A SERIES OF SUGGESTIONS TO AID PRODUCTION

HOW TO SOLVE

Operating Problems with *Correct Lubrication*

Here's a "Hot Spot" for Oil

Those Valves Must Stay CLEAN!

HERE'S WHAT dirty discharge valves can result in: *Leakage of air, decreased capacity, lower efficiency, higher discharge temperature.*

For assurance of clean valves—use the correct oil.

The oil—carried past the valve by the compressed air—coats it with a necessary oil film. The oil must not oxidize on this "hot spot." That is why it must provide:

1. High chemical stability—freedom from deposit.
2. High lubricity—full protection to piston and cylinder with minimum feeds. This minimizes the amount carried to the discharge valves, further safeguarding against deposits.

You'll find Gargoyle D. T. E. Oil does *both* jobs well. It will help you secure full capacity output with minimum time and expense needed for maintenance or repairs.

GARGOYLE Lubricants

SOCONY-VACUUM OIL CO., INC.— Standard Oil of N. Y. Div. • White Star Div. • Lubrite Div. • Chicago Div. White Eagle Div. • Wadhams Div. • Magnolia Petroleum Co. • General Petroleum Corporation of Calif.

CALL IN SOCONY-VACUUM

Pass the Dirt

(*Continued from page 436*)

sewerage, water, underground drainage lines, and on 10,000 feet of steam lines.

Pouring Concrete

While heavy dirt-moving operations were in progress on the project it was usual to have large quantities of concrete being poured under a variety of conditions. Early in March, 5,396 cubic yards of concrete were poured in one day and this quantity increased from day to day until a month later the total pour for one day reached 8,959 cubic yards of concrete. This concrete was furnished by four batcher plants.

The following facts and figures about one day's pour, on April 8, are interesting as an example of the concrete work. On this day, 1,485 cubic yards and 3,432 cubic yards, respectively, were poured by Maxon's batcher plants, No. 1 and No. 2. Midwest's batcher plant poured 3,404 cubic yards of concrete on this day and 683 cubic yards were poured by a mobile mixer. Ninety-five different placements with an average of 94.4 cubic yards for each placement were poured. During the record hour of this day 655 cubic yards, or 10.9 cubic yards per minute were poured. Twenty-five igloos and 3.1 acres of floor and pavement were completed in the one day. The amount of work and material involved in a day's pour of this size can best be realized when we consider that it took 40 carloads of cement, 256 carloads of aggregate, 358,400 gallons of water and 10,441 transit-mix miles of mixer travel.

The daily concrete pours held a fair average with record pours not exceeding previous day's pours by 10 per cent, nor was the following day's pour less than 10 per cent below any record pour. Although larger quantities of concrete have been poured in a day's time on other projects, it is doubtful whether a similar record has been made under the conditions involved where transit-mixers were used and pouring spots were widely scattered over the entire 48,000 acres of the area.

"The more it carries the more it can pull"
That's what they've said about LINN Haftraks since 1916. And LINN'S basic traction method is now doing double duty for the Allied Nations by means of LINN Traktrailers.
SINCE 1916
LINN
CONTOUR-FOLLOWING TRACTION
THE
LINN MANUFACTURING CORPORATION
MORRIS NEW YORK

Engineering Work

The firm of Graham, Anderson, Probst and White, architectural engineers of Chicago, Illinois, did the chief preliminary engineering work on this project. This firm has been selected by the Army Corps of Engineers for air bases and other military projects in and out of the continental limits of the United States. The firm is organized on a large scale so that they were ably sufficient to meet the demands and responsibilities of the building program, including structural, electrical, sanitary and mechanical engineering, with coordination and direction with the contractors in all phases of the building program. Mr. Clifford Noonan was resident engineer for Graham, Anderson, Probst and White. On this project the firm was departmentalized so that their respective specialists executed field layout work, design or re-design, and engineering of many of the structures, and design of highways and railroads.

The Arcole Midwest Construction Company was awarded a large contract to do the dirt work in the smokeless powder area and to construct the smokeless powder magazines. The company moved onto the reservation seeking an office location close to its work, source of materials and its concrete batcher plant. Midwest opened its office near a little cemetery in an old country church, deserted when the farmers left their former community on the reservation. Mr. Louis Fahrberger, project manager of the Arcole Midwest Construction Company, converted the church into a very efficient field office and had construction operations in full swing shortly after, in the latter part of October.

The enormity of the job accomplished on this project by the Arcole Midwest Construction Company may be best realized when thought is given to the work involved in moving 2,281,470 cubic yards of earth, 634,341 cubic yards of which were handled during December, January and February when the ground was frozen. In mixing 235,871 cubic yards of concrete the Midwest Company

used 6,068 carloads of aggregate, 891 carloads of cement and 8,260,000 gallons of water. In spite of snow and cold winds the Arcole Midwest employees pushed through their work day after day. Similar effort was a continuous occurrence by other contractors over the entire job.

Good Safety Record

In spite of the almost daily high winds that are a regular occurrence in this section of the country causing at times a hazard to dirt-moving and road building operations there was a good safety record on the project. There was one fatality for every 12,120,036 man-hours worked. Accidents have been the main cause of absenteeism but only 0.87 days were lost through accidents for every 1,000 man-hours worked. There were over 7,500 people employed on the Hastings Naval Ammunition Depot at the height of construction and about 75 per cent, or approximately 5,600 were employed throughout the entire project.

Construction of war plants like this is as much a part of and is essential to winning the war as any phase of the war program. Along with the all-out effort to get a large and essential job done in record time, an average of 97 per cent of the employees in all departments on the project subscribed for the purchase of United States War Bonds through the payment allotment plan.

Much of the success in the construction of this plant was due to the hard work and persistent efforts of Mr. C. L. Ohl, vice-president, Mr. S. O. Claggett, general superintendent and Mr. W. R. Pierson, field superintendent, of the Maxon Construction Company, and the direction and co-operation of Commander W. B. Short and Lt. Commander G. H. Carrithers, naval officers in charge of construction, with the assistance of Lt. Commander W. B. Sedgwick.

Other contracting firms on the naval plant construction, who helpmake an early completion date possible, were: the Commonwealth Electric Company with Paul C. Schorr, Jr., general superintendent; McGeary & Son of Minneapolis and St. Paul, Minnesota, plumbing and heating, C. M. McGeary, proprietor; Master Waterproofers, Inc., with C. J. Callaghan as general superintendent.

COVER PICTURE

M. Ogle of Gearhart, Oregon, uses his International TD-18 tractor equipped with Pacific Car and Foundry Company's big Carco arch and winch and Bucyrus-Erie bulldozer with 10-foot, 2-inch blade to arch this big Sitka spruce log part way down a boulder-filled creek bed. The spruce log, with big branch not cut off, was 40 feet long and 56 inches in diameter and measured 4,000 feet.

With an average tractor haul to truck loading place of 3,000 feet, an average of from 40,000 to 50,000 feet of timber was moved per eight-hour day. Fuel consumption was 2½ gallons per hour. Logs were hauled by motor truck north to a point near Astoria and dumped into Youngs River.

To Save TIRES
also Protect TRUCKS AND TRAILERS
GATKE
BRAKE BLOCKS
and LINERS
Custom-Bilt
for the JOB
GATKE Brake Blocks and Liners are made for all requirements of Trucks, Tractors, Trailers and other Heavy Duty Equipment.

For *War Essential Conservation* of Tires and Equipment, you need *these extra performance qualities* of GATKE *CUSTOM-BILT* Brake Blocks.

Smooth, *non-grabbing* action that *adds miles* to tire life and *avoids strain* on men and equipment.

Dependable stopping power for emergencies under all service conditions.

Long wear life that avoids frequent adjustments and saves maintenance.

Comparison is the test. Until you've used GATKE Brake Blocks, *CUSTOM-BILT for the job, you can't begin to appreciate the marvelous improvements they offer.*

Ask your GATKE Jobber or write.

GATKE CORPORATION
HEAVY DUTY BRAKE BLOCK DIVISION
232 N. La Salle St. Chicago, 1, Ill.

New trade literature

Title: "Selected Films, Articles and Pamphlets on Highway Transportation in Wartime"

Subject: A list or bibliography including a selection of pamphlets, articles and films on wartime traffic conservation. It is intended as a supplement to the wartime traffic program, a charter of objectives which 35 national organizations have jointly endorsed. It is confined to materials which have been restricted since the war began. It has been printed in flexible form to allow for simple revision and inclusion of new, important publications and to incorporate suggestions for its maximum usefulness and effectiveness.

Where to Get: Automotive Safety Foundation, Tower Building, Washington 5, D. C.

Title: "Structural Members and Connections"

Subject: A comprehensive treatment of the general theory pertaining to structural members, also their detailed design and the design of their connections with other members. Written for practicing engineers and students as a reference book, it also covers the design of steel and cast iron members splices and connections of steel members, design of wooden members and splices and connections and design of reinforced concrete members in a practical treatment including a number of worked out illustrated problems. In this edition considerable revision has been made to bring the treatment in line with latest design or construction procedures and standards.

Where to Get: McGraw-Hill Publishing Co., Inc., McGraw-Hill Bldg., 330 West 42nd Street, New York, New York. Price $6.00.

Title: "First Aid Reminders"

Subject: A first aid digest in a handy reference and review form, with space on back cover for imprint or advertising message. An important feature of the digest is a column of "do's and don'ts."

Where to Get: Associated Editors, 55 West 44th Street, New York City. Price—100 copies (minimum) 8c each, 10,000 copies 3c each.

Title: "Jaw Crushers"

Subject: A colored eight-page bulletin presenting a complete line of roller bearing jaw crushers and features of construction and operation. Also includes large cross section views of complete crushers, bearings, etc. Operational data, specifications and dimensions are also provided and arranged for easy reference.

Where to Get: Any Austin-Western distributor or Austin-Western Road Machinery Company, Aurora, Illinois.

Title: "If It's Piping Contact Flori"

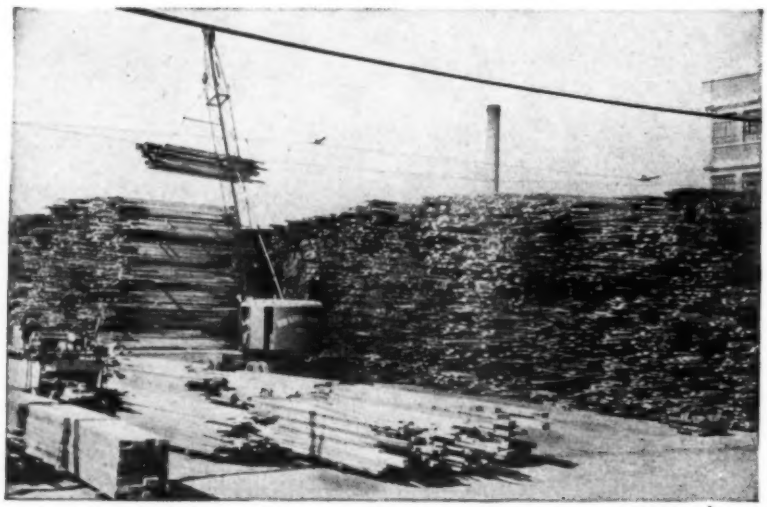
Subject: An interesting 64-page booklet illustrating many applications of fabricated piping. As a handy reference the book also contains present market prices for every size and kind of fabricated piping.

Where to Get: Flori Pipe Company, Department F-8, St. Louis, Missouri, free upon request.

Title: "Industry's Magic Carpet"

Subject: An unusual presentation of open steel flooring, gradings and safety steps and featuring large illustrations which clearly show the proportions and construction of many different designs of open steel flooring. The 24-page catalog also contains installation views showing the application of open steel flooring in a large variety of industries. A standard safe load table and sketch of typical floor plan, together with complete dimensions of the various types of flooring and safety steps intended to assist engineers and construction men in selecting and laying out floors.

Where to Get: Kerlow Steel Flooring Co., 222 Culver Ave., Jersey City 5, New Jersey.



MOVE MORE, FASTER, AND FOR LESS COST

GENERAL

recommends the continued purchase of War Bonds and Stamps — and the observance of preventive maintenance to keep your machinery running.

The GENERAL SUPERCRANE is a necessity on any job that requires more work per day, more speed on the job, and lower operating costs.

How can the GENERAL SUPERCRANE do all these things? It is self-propelled —mounted on Pneumatic tires—operated by one man—powered by one engine.

The OSGOOD COMPANY
Sizes: ½ to 2½ Cu. Yd.
Diesel · Oil · Gas · Electric
Associated with The GENERAL EXCAVATOR CO

The HERCULES COMPANY
HERCULES "IRONEROLLERS"
6 to 12 Tons
Diesel or Gasoline
Associated with The GENERAL EXCAVATOR CO.

GENERAL
Sizes: ⅜-½-⅝-¾ Cu. Yd.
Diesel—Gas—Electric
SHOVELS
DRAGLINES - CRANES
Crawler & Wheel Mounted
THE GENERAL EXCAVATOR COMPANY, Marion, Ohio

Notes from the manufacturers

Caterpillar Tractor Company, Peoria, Illinois, announces that Henry H. Howard, who has been associated with the company since 1926, is returning from a wartime post with the United States Ordnance Department in Detroit to become the company's general sales manager. Mr. Howard was manager of the Engine Sales Department when called for temporary emergency duties in the War Department in 1942. J. Q. McDonald, who assumed the extra burdens of the sales manager's office, has returned to his regular duties as export manager.

D. W. Onan and Sons, Minneapolis, Minnesota, were recently awarded the Army-Navy "E" for outstanding achievement in war production.

Mack Trucks, Inc., Empire State Bldg., New York, New York, announces that M. C. Horine, sales promotion manager of the company, has been appointed special consultant to the director, Automotive Division, War Production Board. Mr. Horine has been granted leave of absence from the company and will make his headquarters in Washington.

The Baker Manufacturing Company, Springfield, Illinois, have been awarded the Army-Navy "E" for outstanding achievement in producing war equipment.

Homestead Valve Manufacturing Company, Inc., Coraopolis, Pennsylvania, has been awarded a gold star for their Maritime "M" pennant, signifying continued outstanding achievement in war production.

E. I. Du Pont De Nemours and Company, Inc., Du Pont, Washington, have been awarded the Army-Navy "E". This was the 28th "E" to be awarded to plants owned or operated by the company.

The Timken Roller Bearing Company, Canton, Ohio, announces that S. R. Kallenbaugh has been appointed West Coast District Manager of the Steel and Tube Division, whose western offices are at 1526 South Olive Street, Los Angeles, California. Previous to his present appointment Kallenbaugh was metallurgical service representative for the company in Cleveland and Detroit.

The company also announces that Earle M. Jorgensen Company, distributors of Timken Graphitic Steel in Texas and Oklahoma, have expanded their activities to include the sale of the product in Arizona and southern California. A complete stock will be maintained in the Los Angeles warehouse.

POSITIONS WANTED

Address all box numbers
c/o EXCAVATING ENGINEER
South Milwaukee, Wis.

ALL-AROUND OPERATOR

Can operate any kind of machine, large or small. Have had experience in quarry, ore and coal stripping. Prefer quarry or mining. Familiar with grading work. Operate steam, diesel, gas or electric. Can do own repair work. Will go anywhere. Box 9211

STRIPPING SHOVEL OPERATOR

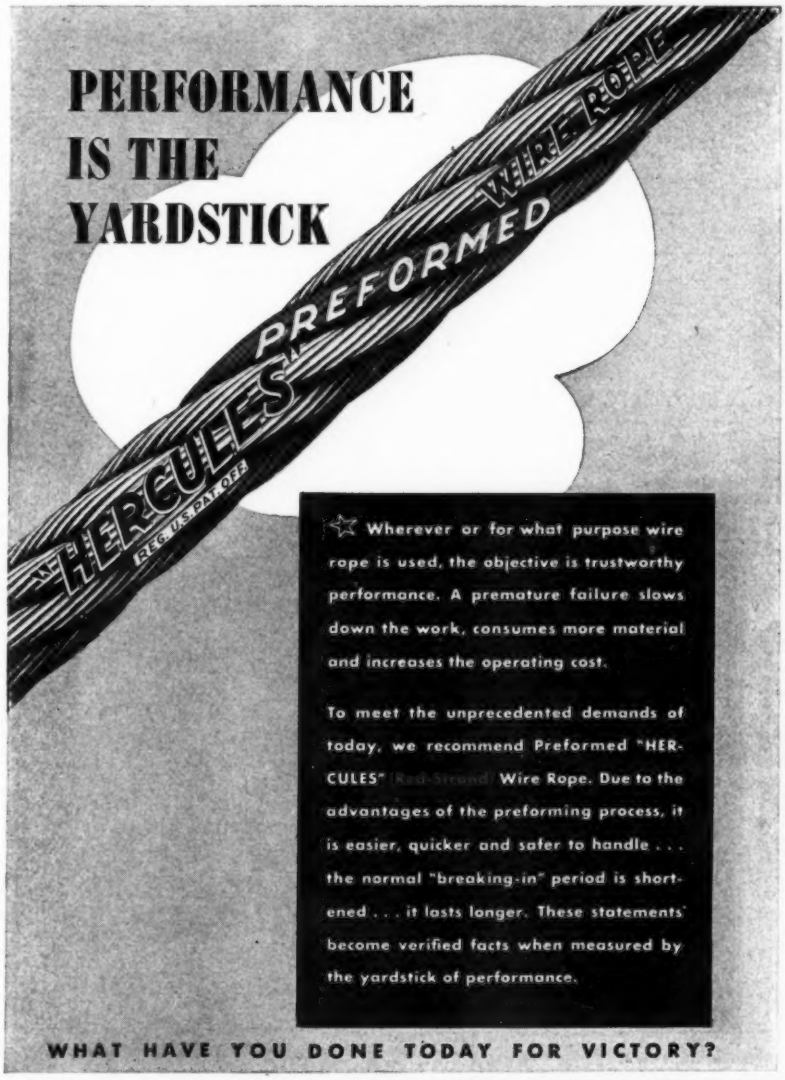
Experienced operator with 40 years service on steam, gas, and electric wants work on stripping shovel or dragline. Steady worker; able to make own repairs. Willing to go anywhere. Now located Pennsylvania. Box 9214

EXPERIENCED OPERATOR

Shovel, crane, pull shovel and dragline operator. Capacities from ½ yd. to 5 yds. Steam, gasoline, diesel and electric. Can operate Bucyrus-Erie 120-B, Bucyrus-Monighan 5-W, Koehring, Northwest, P&H, Lima and Bay City machines. Also locomotive cranes. Prefer Bucyrus-Erie. 25 years experience. 2 years in South America. Willing to go any place in the U.S.A. or South America. Not in the draft. Can overhaul and repair all makes of Machines. Now located Wisconsin. Box 9212

OPERATOR—15 YRS. EXPERIENCE

Operator of shovels, draglines and clamshells up to 3 yards capacity wishes steady employment on any type of machine—gas, diesel, or steam—anywhere in U.S.A. Age 38; married; Selective Service classification 3AH. Prefers general excavating, sand and gravel or stock pile work. Now located Wisconsin. Box 9213


PERFORMANCE
IS THE
YARDSTICK
HERCULES
PREFORMED
WIRE ROPE
REG. U.S. PAT. OFF.
☆ Wherever or for what purpose wire rope is used, the objective is trustworthy performance. A premature failure slows down the work, consumes more material and increases the operating cost.
To meet the unprecedented demands of today, we recommend Preformed "HERCULES" Red-Strand Wire Rope. Due to the advantages of the preforming process, it is easier, quicker and safer to handle . . . the normal "breaking-in" period is shortened . . . it lasts longer. These statements become verified facts when measured by the yardstick of performance.
WHAT HAVE YOU DONE TODAY FOR VICTORY?

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK • • • 90 West Street
CHICAGO • • 810 W. Washington Blvd.
DENVER • • • 1554 Wazee Street
SAN FRANCISCO • • 520 Fourth Street
PORTLAND • • 914 N. W. 14th Avenue
SEATTLE • • 3410 First Avenue South

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

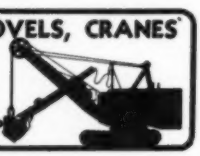
SMALL SHOVELS, CRANES AND DRAGLINES UP TO 2½ YDS.

FOR SALE
MARION 1½-yard diesel shovel, Model 361, built 1936, completely overhauled in our shop.
P&H Model 600 1¼-yard crane, with or without shovel attach., completely overhauled in our shop.
Boehck Equipment Company
2404 W. Clybourn Street
Milwaukee 3, Wisconsin

FOR RENT
1 yd. Bucyrus-Erie 32-B
1¼ yd. Lorain 69
Diesel shovels, cranes, clamshells, and draglines.
393 Brookline Street,
Newton Center, Mass. Tel. LASell 4300

Marion 32 Steam equipped with 60′ boom, 60′ leads and No. 1 Vulcan Steam Hammer. Good condition.
Ed. H. Honnen Construction Co., Colorado Springs, Colorado.

LARGE SHOVELS, CRANES AND DRAGLINES 2½ YDS. AND UP



Bucyrus Class 14, 2½ yd. Steam Dragline. 70 ft. boom. Boiler, engines, cab, boom and paint in exceptionally good condition. Located Richmond, Va. Also Erie ¾ yd. Steam, 40 ft. boom, combination Dragline and Clamshell in good repair. Located Norfolk, Va. Box 2984

BUCYRUS-MONIGHAN 2T Walker—Bucyrus-Erie 37B Gas—Bucyrus-Erie 30B Steam. Location northwest. Box 2969

For prompt sale—used 175-B Ward-Leonard electric shovel 65′ boom, 42′ handle, 7 yard coal loading dipper or could handle 4 or 5 yard stripping dipper. Has operated about one-third of time since shipment, is well maintained and excellent operating condition. Can be demonstrated, reasonably priced. Ready for immediate delivery. Box 2980

MISCELLANEOUS EQUIPT.

Milwaukee (Westinghouse-Baldwin) gasoline locomotives (3), 7-ton 30″ ga., rebuilt.
Davenport, Vulcan & Porter steam locomotives, 17-20 ton, 36″ ga., 10x16 cyls., (4) A-1.
35-ton pneumatic tired carryall trailer; A-1.
Newhouse 7″ reduction crushers, a.c., (3).
Bucyrus-Erie gas-air shovel, GA-2, 1¼ yd.
Worthington 5′x40′ rotary dryer, direct, coal.
Euclid 6-yd. bottom dump crawler wagons (8).
Buckeye semi-Diesel eng.-gen. set, 260 HP.
12″ gyratory crusher, 1000 hp. hydro plant.
Steel kiln tanks (3), 16′x32′x¾″.
Browning 25-ton loco. crane, steam, A-1.
Hayward 2-yd. orange peel bkts.; 5-yd. clam.
Bucyrus 15-20 ton loco. crane, steam, 8-whl. std. ga., 54″ boiler, 40′ bm., cheap.
H. Y. SMITH CO.
828 N. Broadway Milwaukee 2, Wis.

PRICED TO SELL
Portable conveyor, self propelling, 30′ long 18″ belt concave, Barber-Greene, 3 phase electric motor 220 AC. First class condition. Belt new. Located Wisconsin.
Box 2979

P&H Model 10-30 Trenching Machine Serial No. 3644. Depth 7′—10′—13′, Width 22″ 26″—30″—35″. Power plant—Waukesha 55 HP. Very good condition and ready for immediate shipment. Priced for quick sale.
1 JAEGER Model 7S Concrete Mixer Hoist and pneumatic tires.
1 FOOTE Paver No. 3552—Model E-26.
Ingersoll's Equipment and Supply
19930 Detroit Rd.
Rocky River 16, Ohio

One Caterpillar Diesel 40 Tractor in good condition: One Cedar Rapids Crushing Plant, 9″ by 24″ Jaws, 16″ by 24″ Rolls, bucket elevator, mounted on Pneumatic Tires: One 60 Caterpillar Tractor & Bulldozer, fair condition: One Schinck Loader to fit Farmall Tractor, ⅜ Yard Bucket like new.
MARTIN COUNTY NATIONAL BANK
Fairmont, Minn.

25 ton Industrial locomotive crane.
20 ton Brownhoist locomotive crane.
12 ton Orton locomotive crane.
25 ton Industrial-Brownhoist gas crawler crane.
40 ton Vulcan saddle tank locomotive.
16 ton Vulcan 36″ gauge gas locomotive.
MACKINTOSH ENGINEERING CO.
2907 Library Ave.
Cleveland 9, Ohio

FOR SALE
1—Model 8 Athey Mobiloader, with 6 ft. bucket, and with Bulldozer attachment, like new, used only a few hours, for mounting on Caterpillar D-8 tractor.
Wm. H. Ziegler Co., Inc. Duluth, Minn.

Welding and Cutting Outfits, Torches, Regulators and Gauges, for heavy, medium and light welding and cutting.
Superior Oxy-Acetylene Co., Hamilton, Ohio

FOR SALE
Two 20-ton capacity 1937 Linn Tractor Trucks, Model L-37-D, powered with HB-6 150 H.P. Cummins-Diesel Engines with Spicer 4-speed forward and 4-speed reverse transmission. Commercial twin 4-section telescoping hoist. One tractor can be equipped with single action hydraulic bulldozer attachment suitable for road building. Price each—$7,500 f.o.b. Gilberton, Pennsylvania.
Gilberton Coal Co., Box No. 423, Gilberton, Pennsylvania.

27E Koehring Paver with Skip, bucket	$1500
Model 206 P&H Crane 40′ boom	2500
60 KVA Diesel Generator Set 3-60-220V	3495
10 ton Euclid Crawler Wagon 2-way dump	1000
Sullivan Stationary Compressor 450′	1333
12.5 KW DC Generator Set 125 volt	850

Also large stock of rental equipment.
ROY C. WHAYNE SUPPLY CO.
800 W. Main St. Louisville, Ky.

Will rent, sell or trade for 5 yd. Cat. & scoop, one R ½-yd. Insley comb. shovel & dragline complete with fairleads & ⅝ yd bucket. Good condition. Miller Excavating Co., 4961 Center, Omaha, Nebr.

Make offers for 1 practically new dipper stick complete, for Lorain 40. Jack Shields, P. O. Box 771, Merced, Calif.

FOR SALE
1 New England Bucket Loader.
DOOLEY BROS., INC.
39 George St.
Roxbury, Mass.

WANTED
Fuller-Kenyon Cement Pump. New or Used. Must be in good condition. Box 2985

WANTED
Shovels and Draglines
Ingersoll's Equipment & Supply
19930 Detroit Rd.
Rocky River 16, Ohio